FERNALD MEMORIAL NUMBER

Volume XIV Nos. 1 and 2

BULLETIN

OF THE

MASSACHUSETTS DEPARTMENT OF MENTAL DISEASES

(PUBLISHED QUARTERLY)

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WALTER E. FERNALD, M.D.
Superintendent, 1887–1924

FERNALD MEMORIAL NUMBER
Volume XIV Nos. 1 and 2

BULLETIN

OF THE

MASSACHUSETTS DEPARTMENT OF MENTAL DISEASES

(PUBLISHED QUARTERLY)

EDITED UNDER THE PROVISIONS OF SEC. 11, CHAPTER 123, GENERAL LAWS

BY

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APRIL, 1930

PUBLICATION OF THIS DOCUMENT APPROVED BY THE COMMISSION ON ADMINISTRATION AND FINANCE
3500. 7-'30. Order 9635.

CONTENTS

PAGE

Note: — (The school of which Dr. Fernald was the superintendent was formerly called the Massachusetts School for the Feeble-Minded. After Dr. Fernald's death the name was changed by Act of the Legislature in 1925 to the Walter E. Fernald State School.)

Foreword 3

Resolutions Adopted by Department of Mental Diseases . . . 4

Resolutions of the Superintendents of State Hospitals 5

Testimonial of the Fernald School 6–9

Address Given at Memorial Meeting for Dr. Fernald 10–16
George L. Wallace, M.D.

Tribute to Dr. Fernald 17–18
Thomas W. Salmon, M.D.

History of the Care of the Feeble-Minded 19–29
Benjamin W. Baker, M.D.

Templeton Colony 30–39
Ransom A. Greene, M.D.

Development of Institutional Care for the Feeble-Minded . . . 40–60
A. R. T. Wylie, Ph.D., M.D.

The Private School—Its Contributions to the Problem of the Mental Defective 61–67
Groves Blake Smith, M.D.

Examination of Retarded Children in the Public Schools . . . 68–74
Anna M. Wallace, M.D.
Edith E. Woodill, M.D.

Fernald's Influence on the Special Class Movement 75–94
Miss Frances E. Cheney

Community Care of Feeble-Minded 95–101
C. Stanley Raymond, M.D.

Fernald, Friend of the Child 102–107
Herbert B. Parsons

Researches in Feeble-Mindedness with Special Relationship to Inheritance 108–229
Abraham Myerson, M.D.
with the collaboration of Henry B. Elkind, M.D., Louis Ullian, M.D., Hannah Smith.

Mongolism and Its Treatment 229–234
Walter Timme, M.D.

Remarks on the Pathology of the Feeble-Minded 234–241
Oscar J. Raeder, M.D.
Myrtelle M. Canavan, M.D.

A Study of Congenitally Syphilitic Mental Defectives 241–245
Howard W. Potter, M.D.

Bibliography of Dr. Fernald 246–258
E. E. Woodill, M.D.
A. M. Wallace, M.D.

WALTER E. FERNALD MEMORIAL NUMBER

FOREWORD

Among the names which bulk large in the history of psychiatry one of the most conspicuous is that of Walter E. Fernald. Taking up as he did the problem of mental deficiency at a time when the care of the feeble-minded was essentially custodial, he developed the concept of training his charges with a view to fitting them for life in the community. This attitude, then new and almost revolutionary, has now become the accepted principle in the field of mental defect.

Not only Massachusetts, but the entire civilized world, owes a debt of gratitude to the sagacity, humanity and foresight of this great man. It is as a token of this gratitude, and with pride in the accomplishment of a loyal servant of the Commonwealth, that the Department of Mental Diseases dedicates this issue of its Bulletin to the memory of Walter E. Fernald.

GEORGE M. KLINE.

RESOLUTIONS ADOPTED BY THE DEPARTMENT OF MENTAL DISEASES

Whereas, In the passing of Dr. Walter Elmore Fernald, Superintendent of the Massachusetts School for the Feeble-Minded for thirty-seven years, the Commonwealth has met with an irreparable loss, the Commissioners of the Department of Mental Diseases pause in tribute to the rare qualities of this great man — whose distinguished works in the field of feeble-mindedness will live on, a monument to his memory. The school at Waltham was the first of its kind to be established in this country and — through the broadening and development of its policy by reaching out into the community — has steadily advanced in accordance with the ideals of Dr. Fernald, whose leadership has long been recognized, not only in this State but in other States and countries. Statesmanlike, resourceful and far-seeing, with a simplicity and kindliness in his bearing, his was a compelling personality of much personal charm. It was a privilege to have been associated with him — and we feel keenly that there is a vacant place. Be it therefore,

RESOLVED, In gratefully acknowledging his services, these resolutions be spread upon the records and a copy thereof sent to the family of Dr. Fernald.

RESOLUTIONS OF THE SUPERINTENDENTS

To Mrs. Walter Elmore Fernald and the Members of His Family:

We, associates of our distinguished brother, Doctor Walter Elmore Fernald, Superintendents of the Hospitals for Mental Diseases and of the Schools for the Feeble-Minded, of Massachusetts, assembled at our first monthly meeting following his death, beg to express our heartfelt sympathy to you and yours in this our common hour of sorrow and bereavement.

We beg that we be permitted to join ourselves to the stricken circle of near ones whose feeling of loss is more intimate and personal and closer to the heart than that of the great number who are bowed, with you and with us, in grief; but who had not the privilege of knowing Walter Fernald as we did. For, Walter Elmore Fernald, the man, who inspired lasting friendships and loves and loyalties, was much more remarkable to his friends than even the vast bulk and merit of his works approves him.

It was in the sacred circle of his intimates, in the commerce of friendship, by his cheering, uplifting influence, by his brave attitude towards life, by his lofty ideals, and by his unwearied intellectual efforts, that he was an outstanding figure such as men delight to elect and follow as Leader and Inspirer, —

> And, afterward, when the silver cord
> of life is broken, to remember with
> gratitude while memory remains.

The affection and pride which his radiant personality and abilities inspired in us, and the sense of loss we feel at this hour, we know represent but faintly the feelings of those who knew him even more closely, and of whose lives he was an intimate part.

But we, too, regard ourselves as children and dependents of his great leadership. And our hearts are desolated, since he is with us no more. There remains, and will remain, always, with us the impression of his gracious friendliness, his generous thoughts, his honorable words and deeds, and his example.

> These are things that will persist
> And live like a Spirit among us,
> "One with him in the dim Forever."

Out of all bounds of time and space there falls this harmony among us: memories: intimate little touches of consideration and human kindness, helpful suggestions and assistance, wise guidance, inspiring counsel. All his!

Other things fade and pass in time. These remain.

> "The Stars shine as of old. The Unchanging River,
> Bent on its errand of immortal law,
> Runs its appointed way
> To the Immemorial Sea.
> And the brave truth comes overwhelmingly home:—
> That he, in us, yet lives and shines,
> Shines and fulfills himself,
> Unending as the River and the Stars."

TESTIMONIAL OF THE FERNALD SCHOOL

At the annual meeting of the Corporation of the Massachusetts School for the Feeble-Minded, held at the School on Thursday, December 11, 1924, the following testimonial, prepared by Prof. Thomas N. Carver, was read, adopted and ordered printed with the annual report.

Minute on the Death of Dr. Fernald

In the fortieth annual report of the Trustees of the Massachusetts School for the Feeble-Minded for the year ending September 30, 1887, appears the following brief chronicle:

"After serious and prolonged search the Trustees have elected Walter E. Fernald, M.D., the first resident superintendent of the school. They need say no more about him than that his professional and personal qualifications appear to promise success in his responsible and delicate labors. He has had the varied experience and training which his post requires and will enter upon it, not to try his hand, but to bring his matured acquirements to our assistance."

The coming of Dr. Fernald marked an epoch, not only in the history of this school, but in the care and education of the feeble-minded everywhere. When he came, the school was located in South Boston; it had never had a resident superintendent; it was inadequately housed, and though it had had the priceless benefit of the advice and counsel of the great Seguin, there was yet no constructive mind at its head to transform that advice into a living school and to make it a dynamic factor in the life of the State and the nation. After thirty-seven years of labor, he laid down his work on the evening of Thanksgiving Day, Thursday, November 27, 1924. The school, as he left it, is a monument to his life and work. While it was still far below his own ideals, it was nevertheless an example followed by other institutions throughout the country and, to some extent, throughout the civilized world.

He was born at Kittery, Maine, February 11, 1859, of old New England stock. He was educated in the public schools, in the New Hampden Literary Institution and the Medical School of Maine. From 1882 to 1887 he was assistant physician at the State Insane Hospital at Mendota, Wisconsin, from which position he was called to take up his work at the Massachusetts School for the Feeble-Minded.

During his period of service here, he achieved distinction as a builder, as an educator, as an organizer, as a scientist, and as an inspiring and lovable person.

As a builder, his skill is evidenced by the plant as it now stands in Waltham, and the farm at Templeton. Everything that has been done on the grounds has been done under his immediate supervision and is his personal achievement. During the last twenty years there has been practically no building erected anywhere in the United States, by any institution for the care of defectives, without first seeking his friendly and expert advice.

His extraordinary versatility has been the marvel of all those who were familiar with his work. For many years he had to be his own engineer, to know carpentry and all the details of construction, ventilation, sewage disposal, care of cows, balanced rations, and a multitude of other things. There was practically nothing that had to do with the care and education of the feeble-minded or with the construction and operation of a plant for that purpose in which he was not more expert than most specialists.

His last achievement in the field of physical construction was the completion of the power plant, which had been the desire of his heart for many years. It is a source of gratification to all his friends that he lived to see it completed and in operation.

Probably his greatest work as a builder was the library of the school, pronounced by experts to be the most complete library on Mental Defect to be found anywhere in the world. This has been his own personal work. Every book, pamphlet and reference bearing on the subject that he has been able to get, either in this or any country, is now in that library.

His achievements as an educator have been even more far reaching in their influence than his achievements as a builder. He early realized that the first step in the education of the feeble-minded was to make them happy; that the feeble-minded, like other people, are happy when they are doing something for which their capacity fits them. Accordingly, he arranged for every child under his care a twenty-four-hour program, in which the child was doing, all the time, whatever its needs and capacities demanded. To provide amusements for a child of high mentality that are suitable only for children of low mentality would be uninteresting to the child. To provide amusements for a child of low mentality that were suitable for children of high mentality would be irritating. Therefore, each child was provided with the opportunity to play according to its capacity. Work was also provided on the same plan. Dr. Fernald was the first person to standardize manual labor according to intellectual levels. He was able to find work that was nicely adjusted to the mental capacity of every feeble-minded person. This made their work a pleasure as well as a means of education.

His leadership in this field was so clearly recognized that the school has become in a real sense a university. Men and women from all over the world have come here to see not only the economy and sturdy construction of the buildings, but to study his methods of training the feeble-minded. During the last year of his labor, individuals and delegations had been sent from thirteen foreign countries, from twenty-eight States of this country and from four provinces of Canada. He has been a welcome and inspiring lecturer before medical students of the Tufts and Harvard Medical Schools. He has been instructor of teachers for special classes of backward children, of public health nurses, physicians taking post-graduate work in pediatrics and in nervous and mental diseases, normal school students, public school teachers and superintendents. During the week immediately preceding his death, he was conducting a course for physicians from all the State hospitals in Massachusetts, to fit them to be psychiatrists in charge of school clinic work in the State.

As an organizer he succeeded in standardizing to the last degree everything he undertook — whether it was the erecting of a building, the clearing of a field of stones, or the loading of wagons. He found that the work of the feeble-minded had to be simplified to the last degree. This simplification required that each pupil should do one thing at a time. To thus simplify the work of each one required extreme forethought and organization to a nicety.

He also succeeded in building up a staff of loyal and capable co-workers. As a scientific investigator his achievements are second only to those in the field of education. "The Waverley Researches in the Pathology of the Feeble-Minded," by Walter E. Fernald, E. E. Southard and Annie E. Taft have been completed through the first thirty numbers, and much more work had been planned. He was the originator of the ten-point system for the testing and classification of the feeble-minded. Previously, it was customary to classify them on the basis of psychological tests alone. Dr. Fernald proved conclusively that this was not enough. In addition to the psychological examination under this system, the pupil's family history, personal and developmental history, school progress, school test, practical knowledge, economic efficiency, social history and traits, moral reactions and general physical conditions, are all counted in estimating his total capacity.

His scientific standing was widely recognized. In 1913 he received the honorary degree of Master of Arts from Harvard University. As a lecturer, he was widely sought, not only by medical schools, but by every learned organization having to do with mental diseases or criminology. He has been twice president of the Association for the Study of the Feeble-Minded. At the time of his death he was president of the Massachusetts Society of Psychiatry and of the Boston School of Occupational Therapy. He had just retired from the presidency of the New England Society of Psychiatry. He was a leader in the National Society of Mental Hygiene.

His reputation in these varied fields of activity, combined with his winning personality, gave him great influence wherever the subject of defectives and defective delinquents was under consideration. He has been instrumental in securing practically every piece of legislation that has had anything to do with these subjects in Massachusetts during the last thirty years.

His was an extraordinarily busy life. Up to the moment of his last illness there was no retardation of his activities. He became ill Friday morning, November 21st. On the preceding Monday he began a course for physicians from all the State hospitals, lecturing and demonstrating from nine till four. Before nine, he cleared his desk of such work as had accumulated and which he could not delegate. Tuesday evening he presided at a meeting of the Massachusetts Society of Psychiatry. Wednesday evening he attended a meeting of the Trustees and Faculty of the Tufts Medical School at the University Club. Thursday evening he was constrained to recall an engagement previously made. Early the next morning he was taken ill, from which illness he did not recover. He literally died in harness.

Those who knew him best, however, will remember him more because of his inspiring and lovable personality than because of his notable achievements. Since his death, literally hundreds of parents of children who had been under his care have testified that they loved him because they felt that he loved the children. Those who knew him realized that it was this, more than his professional enthusiasm, that drove him. Sometimes it seemed that he permitted it to drive him too hard, — but who shall say? It may have hastened the bringing of his labors to an end, but in another sense his labors cannot come to an end. He is with those of whom it is written: "That they may rest from their labors; and their works do follow them."

THOMAS N. CARVER.

ADDRESS GIVEN AT THE MEMORIAL MEETING FOR DR. WALTER E. FERNALD,

Massachusetts Psychiatric Society, January 20, 1925

By George L. Wallace, M.D.,
Superintendent Wrentham State School

Dr. Fernald first became identified with the work for the feeble-minded in 1887 through his appointment as Superintendent of the Massachusetts School for Feeble-Minded which, at that time, was located in South Boston.

When the writer became associated with him in 1893 he had already built an institution to house 400 children at the present site at Waverley and had moved there the children from the congested institution at South Boston.

He had also already gathered and assimilated the best thought of the world regarding the education and care of the feeble-minded and was rapidly becoming a leader and authority in his chosen field. This leadership he maintained to the end of his life. In the year 1893 he was President of the American Association for the Study of the Feeble-Minded. The annual meeting of the Society was held in Chicago at the time of the World's Fair. This society honored itself by selecting him for its president the second time, his last term being the last year of his life and the meeting having been held in Washington last May. The subject of the President's address in 1893 was "The History of the Treatment of the Feeble–minded"; the subject of the President's address in 1924 was "Thirty Years' Progress in the Care of the Feeble–minded." The first address brought up to date what, at that time, had been accomplished for the feeble-minded but, characteristically, it was replete with prophecy for the future. The second and last address thirty years later is a masterpiece in completeness and could well be accepted as a classic on the subject of mental defect. It is also full of youthful vision of prophecy of work to be accomplished. In not one word, sentence or thought contained in that paper can it be gleaned that the author is content with the accomplishments of thirty years of rapid progress, but rather the recitals of accomplishments are prophetic of progress in the future.

The history of these thirty years of accomplishment in the care of the feeble-minded is the history of thirty years of achievement of Dr. Walter E. Fernald, yet, with his characteristic modesty, he makes no allusion to himself. It might, however, very appropriately be re-titled, the "Autobiography of Walter E. Fernald in the Field of Mental Deficiency."

In the early days of his work we found him intensely interested in making institutional provision for the care of the feeble-minded. In this direction his labors were two-fold. It was not only necessary for him to write and lecture in order to build up public sentiment, but also to build and organize an institution and thus prove to a doubting community the desirability and necessity of caring for its feeble-minded.

In organizing the institutional care of the feeble-minded he had no beaten path to follow. He had to attend to all details himself because a new field was being explored. He was the only one who knew and his helpers could only learn from him through precept and example. Thus within his own great brain was gestated and unfolded a new and brighter world for the feeble-minded.

In those early days the work for the feeble-minded was not popular. It was difficult to interest men and women of initiative in the movement. But under the enthusiastic leadership of Dr. Fernald in these later years we have had the satisfaction of seeing some of the best minds in the country focused on this great problem.

Next we find him organizing in his own institution a system of education and training that is used in every school for the feeble-minded in the country and in all special classes in the public schools. The Seguin system that had been permitted to die he resurrected and breathed into it such a vital spark that by amplifying and reinforcing it with his own ingenious methods so long as there are feeble-minded children to be educated and so long as there are understanding educators, the Seguin-Fernald method of education will continue to live.

Later, we find him talking to small groups, to large groups, to individuals, educators, physicians and laymen and working in every possible way for the establishment of special classes for the feeble-minded in the public schools. With his clear and sympathetic understanding of human problems he recognized the many conditions that would make it desirable to give in the public schools the education required by backward children. The first special class in this country was established in Providence in 1896. This was soon followed by the establishment of classes in Springfield, Boston, New Bedford and other cities in Massachusetts and, in a comparatively short time, in every center of any considerable size throughout the country. This influence finally culminated in Massachusetts in the admirable law of 1919 which makes mandatory on the public schools the education of the feeble-minded.

We find him making early use of the Goddard and Terman adaptations of the Simon-Binet tests for measuring intelligence, but with his characteristically clear vision as a physician and psychiatrist, he was unable to satisfy himself that the evaluation of the intelligence of an individual alone was sufficient data upon which to base a satisfactory diagnosis and prognosis. He was much more concerned with the individual as an entity. Hence we find him laboring for years in his endeavors to formulate a satisfactory method of procedure in the examination of patients. Out of this period of struggle and hesitation in which he refused to accept as final the findings of the psychologist, he evolved his ten fields of inquiry, one of which was the psychological examination. The findings from an examination conducted within these ten fields of inquiry presents a graphic, composite picture of the individual as an entity. This method of examination has been adopted by the Department of Mental Diseases and is being used by their organized clinics throughout this State in the examination of children in the public schools. In fact, it is now being widely used throughout the country in institutions, in mental hygiene clinics and by many individual examiners.

With his logical mind and his life habit of advancing consistently (having perfected a satisfactory method of examination) we are not surprised to find him earnestly working for a census of the feeble-minded in Massachusetts in order that the extent of mental defect might be understood and that a satisfactory program for dealing with the problem might be established.

The census in operation revealed a much larger problem than even he had anticipated and we, accordingly, find him revamping his previous program and blazing new trails through the maze of ensuing discouragement to the open spaces where the whole problem is viewed with a clearer vision. He quickly recognized that there must be large numbers of people in the community with poor intelligence who were good citizens and that the condition was surely much larger than institutional problem. But before making any recommendations he felt he must convince himself with some actual evidence; therefore we find him making an extensive survey into the behavior of inmates discharged during a period of twenty years from his own institution. The result of this survey is now a matter of history. It was so satisfactory that it acted as the pivot upon which this great man turned the thought of this country from institutional care alone to community care for the feeble-minded. At the same time the institution was placed in a new relation to the community, — as its agent to do a specialized kind of work in the big problem of caring for the feeble-minded.

From this time until his death he worked unceasingly for a better understanding by the community of the problems of feeble-mindedness with a view to their care in the community, by the community so far as is possible. He realized that there are in the community large numbers of the feeble-minded who are self-supporting and capable of making proper social adjustments; large numbers who require expert attention at certain periods of their lives; that all of them need special consideration during the school period; while large numbers require institutional care and education for a period of their lives and some require institutional care and protection as long as they live.

With his clear conception of the problem we find him working with teachers to the end that they may better understand the backward child, emphasizing always the importance of making him a useful citizen. We find him working with the social workers of established agencies, enlightening them on the problems of mental defect and enlisting their interest and sympathy in supervising those who need supervision in the community. He is also busy at this time establishing clinics for the examination of backward children in connection with the schools in many of the cities. These successful clinics prepared the way for the enactment of the law of 1919 which requires that all children in the public schools who are three or more years retarded shall be examined by a competent psychiatrist and where, in a school section, ten or more children are found whose retardation is due to mental defect, the school authorities shall organize a special class for their education. In making this law operative one of the greatest problems confronting the Department of Mental Diseases was to find competent psychiatrists for the examination of the children with mental defect. In the state hospital service were many competent psychiatrists in the field of mental diseases and at this juncture we find Dr. Fernald organizing a clinic of intensive training to prepare the state hospital physicians for organizing and conducting state-wide clinics for the examination of all retarded children in the public schools. This clinic for the education of the state hospital physicians in the field of mental deficiency he conducted for a week every year.

There we find him as life burned low, lighting the torches of knowledge and passing them along to these men and women, for this clinic of 1924 was his last piece of work among us.

In his institutional work during these later years we find him busied on the physical side, transforming an old institution into a modern, well-equipped one. In research we find him associated with Southard in making an exhaustive study of a series of brains of feeble-minded individuals; organizing an excellent psychological laboratory; instituting a weekly clinic at the School in which thousands of children have been examined and an equal number of parents advised as well as consoled, for at these clinics he was the friend as well as the expert and was always the last to see bereaved and sorrowing parents, always alert to the slightest suggestion that might advance the care of deficient children. We are not surprised to see him early and enthusiastically exploring the field of endocrinology, making use of the extracts of the ductless glands in the treatment of all cases where such treatment was indicated. How delighted he was when these cases made marked improvement, as many of them did. How deep his disappointment over those who failed to improve.

In the field of education we find him perfecting the system of education in his schools to the end that as many children as possible might be prepared to take their places as useful citizens in the community. In connection with this work and in order to insure its success, he organized the social service department whose chief work is to smooth out the rough places in the community for the feeble-minded.

In addition to his interest in the laws creating new institutions and making provision for institutional care of the feeble-minded, he was largely responsible for five laws which have great social significance in dealing with the problem of the feeble-minded.

First — the law requiring the census and registration of the feeble-minded in the State.

Second — the law establishing clinics for the examination of retarded school children.

Third — the law permitting the parole of the feeble-minded from the State Schools.

Fourth — the law legally recognizing the defective delinquents and making separate institutional provision for them.

Fifth — the law requiring that an inquiry shall be made into the mental status of prisoners.

His allied interests were many; he dominated the institutional and community programs for the care of the feeble-minded throughout this country as well as Canada. How successful this domination has been in the interest of the feeble-minded can best be attested by the following quotation from his address at Washington.

"In 1893 there were nineteen state institutions in seventeen different states. In 1924 there were fifty-one state institutions in forty-three different states. Only five states have failed to make institutional provision for the feeble-minded. In 1893 there were 6,009 patients in state institutions and in 1923 there were 39,655 so accommodated. In 1893 there were nine private institutions and in 1923 there were eighty-nine. In 1893 the problem was wholly an institutional one. In 1923 there were special classes in the public schools of 171 cities and towns with an enrollment of 33,971 pupils."

As an officer and promoter of the National Committee for Mental Hygiene we find him interested in the whole problem of the mental health of the Nation. In that department dealing with mental deficiency he was especially instrumental in the establishment of the mental clinics in different cities throughout the country.

His aims were that all feeble-minded be registered and known to the proper authorities; that all receive proper education; that those requiring supervision receive such in accordance with their needs; that those requiring institutional supervision shall live in a world full of educational activities and receive the loving, thoughtful care their condition merits.

Remarkable indeed was his ability to enter sympathetically, understandingly, tactfully into the lives of people of all ages and classes. He understood the young child, heartily entering into his world of imagery and play. He appreciated as few do the acute suffering of child life in its transient disappointments and heartaches. He sympathetically understood the hesitating, shy, awkward, adolescent youth and tactfully let him into the blessed state of self-forgetfulness. The surging restlessness, exuberances, joys, anticipations, hopes and disappointments of young people were always well measured and gauged by him. Fortunate indeed were the many who counted him among their dearest friends. As such, he, without reservation, entered into youthful lives, and his companionship insured them the advice and help so essential to youth in understanding life.

To those in the contributing, producing activities of middle life with its urge for accomplishment, here flushed with success, there chastened with disappointment and bereavement, he functioned as a stabilizer and always a friend, counsellor and leader. To those among the shadows of advancing years his radiant, youthful personality carried gladness and hope.

No class or stratum of society could claim him, for his was an emancipated life, moving freely within the whole range of human experience, wherever there was service for him to render. He was "all things to all men," the simple, country folk, the poor, foreign peasant recently come to our city slums, to those of the great middle class of workers, to those reared in refinement and luxury, to educators and educated, at ease and a friend giving unstinted service.

His ideals were those of service to his fellow men with special consideration for those who most needed his service.

His life was a vibrant cord ready to be touched by his fellows and always to ring true, clear and strong with sympathy, wise counsel, warm and enduring friendships, enthusiastic, untiring service, and hopefulness, always hopefulness.

DR. FERNALD IN 1885
Shortly before he became Superintendent

TRIBUTE TO DR. WALTER E. FERNALD

By Thomas W. Salmon, M.D.,
*Director, National Society for Mental Hygiene**

Read at the Memorial Meeting of the Massachusetts Psychiatric Society January 20, 1925

If ever there was a man who showed wisdom and common sense in everything he did it was Dr. Fernald. This is especially true of his national achievements. He was one of the first board of Directors of the National Committee for Mental Hygiene and one of those who helped Mr. Clifford W. Beers form the original Committee. When this Committee started its program about fifteen years ago Dr. Fernald had completed the first half of his life's work. It would be easy to speak briefly of his influences as a whole on the care and management of the feeble-minded but I must confine myself to his national achievements. When he began his work the most important issue was the actual housing of those who were mentally defective. Only three States had institutions for the feeble-minded. This meant that those little children were found herded in prisons, without health rules and where their individual needs could not be supplied. When he laid down his life's work a few weeks ago thirty-five states had institutions of this sort.

In 1919 the Massachusetts Legislature passed a law for the state-wide examination of mentally retarded children. After the passing of this law Dr. Fernald devoted himself to its successful application. It was interesting to see the manner in which he did his work. He captured those about him with his personality. They were never bored. He did not talk too long. He did not make too many demonstrations but on the other hand he never allowed those in his audience to forget for a minute the purpose for which they came. In Mississippi, Alabama and Massachusetts we find evidence of advice extended to them not through indirect channels but through his personal attention. In 1905 he visited other countries for the purpose of gathering material on the care and management of the feeble-minded. After making this trip he wrote a book which, no doubt, many of those present have read. This book will be a source of help to us for many years in the study of mental deficiency. So, if the feeble-minded children in Edinburgh or London are safer in the community it is so indirectly through the efforts of Dr. Fernald. He had great influence on public opinion and always stimulated interest. He published twenty-five articles which were especially intended for lay people. These articles were widely read and many of those who read them will probably be teachers of his program in the future. He always promoted health interests in the schools. A large percentage of the children who had been under his personal care in the school in Waverley have been released successfully. These children have gone out into the world and become good citizens because of his influence.

---

* Since deceased.

His work is over but his voice is still heard. Within the last twenty years the Legislature has passed many laws for the protection of defective children, and so it is that his work will go on due to the aid of his unseen hand even though he is gone. We who have the honor of carrying on his work will ask ourselves over and over again the question, "How would Dr. Fernald have done this?" and I know we will be able to deal more successfully in the time that is to come with those who are feeble-minded because of his influence.

HISTORY OF THE CARE OF THE FEEBLE-MINDED

By Benjamin W. Baker, M.D.,
Superintendent, Laconia State School, Laconia, N. H.

The care of the mentally feeble children of a state reflects accurately the religious conceptions, the medical science, the educational and judicial standards of that state. For many years the benighting influence of the belief in demoniacal possession as the cause of mental defect and disease obscured the vision to a more intelligent view. For years the defective brain, incased in its bulwark of cranial bones, awaited the development of scientific technique necessary for its investigation — a pedagogy adapted to its needs, and a law to protect defenceless youth.

The religion of Christ and its acceptance by nations advancing in civilization was favorable to the care of the feeble-minded, but the historic bridge which spans the river of time up to the year eighteen hundred is illuminated only occasionally by beacons of scientific discovery. In the fourth century the Bishop of Myra championed the cause of the feeble-minded and organized efforts for their care and protection. In the twelfth century, during the reign of Edward II, England passed a law placing imbeciles under the legal protection of the King, who administered the estates of "natural fools" and provided them sustenance. About the middle of the seventeenth century, St. Vincent de Paul provided care for the mentally infirm at the historic Bicetre in Paris. No attempt had yet been made to investigate the causes of mental deficiency or to treat, train, or educate this class of youth totally devoid of ability to advocate a condition of which there is none more difficult of scientific approach.

A chronic patient's chances of obtaining relief depend on the appealing nature of the affection, a persistent, intelligent presentation of the case and the patient's ability to elicit personal interest. When cured a victory has been won, not only for the patient, but for the whole class of sufferers to which he belonged. The deaf and dumb are credited with eliciting the interest which not only inaugurated the scientific study of the mentally deficient, but of furnishing the creative stimulus for inventing the telephone.

Juan Pablo Bonet, a Spaniard, created the manual alphabet for the deaf and published it in Madrid in 1620. This great scientific achievement was enlarged and enriched by Jacob Roderiques Pereira, a Spanish Jew, who received his initial suggestion from Bonet's manual and probably the incentive for forty years' service to the cause of the deaf and dumb, from a congenitally deaf and dumb woman he met at Bordeau, France. Pereira extended Bonet's work to a dactology of forty signs and believing the deaf should be trained to see and feel the speech they could not hear, he taught by tactile fremitus and by the method of lip reading which he invented. Pereira's work was not only educational to his patients, but to the public. He was awarded a pension by Louis XV of France, and in 1759 made a member of the Royal Society of London. As achievement inspires to greater achievement the elaboration and application of the special pedagogical methods evolved by Bonet and Pereira for the deaf and dumb to the needs of the feeble-minded followed as a natural scientific sequence.

The life work of Bonet and Pereira having been done in France, the influence of their teaching was most effective in that country. Jean Jacques Rousseau, a neighbor of Pereira, and a friend of David Hume, the historian, brought out in 1762 his "Emile." This philosophical treatise on education declared our first teachers of science to be our hands, our feet and our eyes. Fortunately for the cause of the feeble-minded — Jean Itard, physician to an institution for the deaf in Paris, became interested in the psychological discussions of the day and determined to settle the question as to whether ideation is innate or produced only by sensory stimuli. Itard spent five years devising exercises and teaching the celebrated "Savage of Aveyron," an idiot found in the woods. The mistaking an idiot for a savage is not a compliment to diagnostic ability, but the result of Itard's painstaking work proved that even idiots can be benefited by clinical observation and continued suitable instruction. The true significance of Itard's work was appreciated by Edouard Seguin who was born in France in 1812.

Seguin had studied medicine under Itard and had been a pupil of Esquirol, the psychiatrist, who early defined idiocy as a condition of arrested development. In 1837, at the age of 25, Seguin founded in Paris the first successful school expressly established for the training of idiots. He modified, systematized, and elaborated Itard's system and became the inspiring prophet of the best modern work with the subnormal. In 1846 Seguin brought out his great book "The Moral Treatment, Hygiene and Education of Idiots and Other Backward Children." His work was crowned by the French Academy and commended in an autographed letter by Pope Pius IX. In 1848 Seguin emigrated to America, where he became the first superintendent of the Massachusetts School for the Feeble-minded; the first president of the American Association for the Study of the Feeble-minded. The mental attitude of the people in some localities being right for the reception of suggestions, his influences toward provision for the care of the feeble-minded was very considerable in several states.

The efforts of scientists in Paris in behalf of the feeble-minded were observed and emulated by the other European countries. In 1842 Dr. Gugenbuhl established an institution on the cottage plan for cretins at Abdendburg, Switzerland. At about the same time Dr. Saegert opened a school for the feeble-minded in Berlin. A training school for idiots was founded by the Misses White in Bath, England, in 1846. In the year of 1846, the white race in America was engaged in the gigantic task of inhabiting a continent. Human scalps were of uncertain tenure in many parts of our country; the covered wagon was extending the course of the empire westward; a war was being fought with Mexico, which was to result in the addition to the United States of extensive domain to be organized and settled. The public mind was about to be diverted from educational pursuits and sociological organization by the rush to the gold fields of California. The forbidding rumble of national dissension over the slave question was growing louder and the new waves of immigration to our shores were to be drawn into a great and devastating Civil War. The public had not yet assumed the function of affording to normal children education beyond the elementary grades. In the denser centers of population the insane were beginning to receive recognition and pass from home care to public care. In 1846 there were no schools or institutions, either private or public, for the care of the feeble-minded in the United States. Feeble-minded persons were cared for in their homes, in the town or county poor farms, in asylums, in jails or prisons, and sometimes this class served sentences for acts whose meaning they did not even comprehend. There was, however, a growing sense of their presence and of their needs. Sporadic attempts were made by 1818 to train a few feeble-minded at the American Asylum for the Deaf and Dumb in Hartford, Connecticut, and in 1837 at the Perkins Institute for the Blind. On January 22, 1846, on resolution of Judge Byington, the Massachusetts Legislature created a commission on whose recommendation an experimental school for the feeble-minded was established at the Perkins Institute for the Blind in Boston under the supervision of Dr. Samuel G. Howe. This attempt was not abortive, but continuous, and in 1850 the experimental school was incorporated as Massachusetts School for Idiotic and Feeble-minded Children. In July, 1848, a private school for the feeble-minded was established at Barre, Mass., by Dr. Hervey B. Wilbur, a man of great ability who contributed much toward the development of the care of the feeble-minded. A resolution to establish an experimental school for the feeble-minded was presented to the New York Legislature January 3, 1846, by Dr. F. P. Backus, but this and similar resolutions failed of passage until 1851. This experimental school became the State Asylum at Syracuse over which Dr. Hervey B. Wilbur long and ably presided. After his death in 1883, the institution's name was changed to Syracuse State Institution for Feeble-minded Children and Dr. J. C. Carson was its superintendent for twenty-seven years.

Several states now followed the example of Massachusetts and New York in providing for the care of their feeble-minded. Pennsylvania took up the private enterprise of J. B. Richards and established a state aid training school for feeble-minded children at Elwyn in 1853. For years this school was presided over by Dr. Isaac N. Kerlin who was followed for another long period by Dr. M. L. Barr, men of keen insight and literary attainment. In 1857 Ohio provided liberally for the care and training of her feeble-minded by a large state school at Columbus of which the distinguished Dr. G. A. Doren was superintendent for more than thirty years. Within the next decade Connecticut, Kentucky and Illinois had recognized the need of this long-neglected class and established state care.

It is proper to mention here the influence of the pedagogical ideas of Seguin and Howe on the institutional nomenclature. The early workers with the feeble-minded were very sanguine in their belief in the benefits derived from physiological education and training. They properly regarded the establishment of schools for the feeble-minded as a necessary and heretofore omitted link in the public school chain of education; hence the majority of all institutions for the care and training of the feeble-minded in America have been designated "schools."

With increasing political and economic stability, social science demanded and witnessed a gradual extension of the care of the feeble-minded. The superintendents of the early schools were, by virtue of long association with this class and intuitions born of their experience, expert diagnosticians, but there was in existence no standardized diagnostic formula which could be easily taught to others. This great scientific gift which was to change our conceptions of mental growth and profoundly affect the entire field of pedagogy was to come to the world through Doctors Alfred Binet and Thomas Simon, sons of the land of Itard and Seguin.

Alfred Binet was born in Nice, France, July 11, 1857. His mother was an artist, his father a physician. He first studied law, then medicine and was soon absorbed in experimental psychology. The thesis for his degree was written on a study of the "Sub-intestinal Nervous System of Insects." Binet established France's first psychological laboratory in 1889, became its director in 1894 and one year later began publication of "L'Anne Psychologique." He became an expert in the anthropometric measurements of children and in child psychology.

In 1904 the French Minister of Public Instruction appointed Binet a member of a commission to organize classes of backward children in the public schools. Anxious to do no child an injustice and realizing the lack of a standard diagnostic formula for intelligence Binet began the work of creating the Binet-Simon measuring scale of intelligence. Working in collaboration with him was his friend, Dr. Thomas Simon, an alienist of Paris, who was born at Dijon, July 10, 1873. Simon, in 1900, had presented a thesis on the correlation of physical development and intellectual capacity, and had extensive insane hospital experience. After long experimentation and trial their measuring scale appeared in the pages of "L'Anne Psychologique" in 1905, and in a higher state of completion in 1908.

Newly discovered knowledge has not always crossed the Atlantic Ocean within a few brief months from the date of its discovery. To the retrospective memory of those now in the work it seems a happy coincidence that through the vision of Superintendent Edwin R. Johnstone, a psychological research laboratory was created at Vineland Training School, Vineland, New Jersey, and in the fall of 1906, H. H. Goddard, Ph.D., was called as its Director. The following summer Dr. Goddard went to Europe for study and brought back with him the Binet-Simon scale of 1905. When the revised scale appeared in 1908, Dr. Goddard translated it, applied it to hundreds of normal and abnormal children, made additions and modifications to meet American needs and presented his work to the American Association for the Study of the Feeble-minded, and other societies. From this laboratory also came the "Kallikak Family" and other informative family heredity studies.

The measuring scale of intelligence created by Binet and Simon, amplified and propagated in America by Goddard, was seized upon with avidity by psychiatrists and psychologists throughout the country. It was modified and written about, tried by controls, applied for a decade after its appearance by such men as Professor Robert M. Yerkes of Harvard, to whom Binet's work was an inspiration to his point scale; by Rudolph Pintner, Fred Kuhlman, S. D. Porteus, who created a maze and other tests, J. E. Wallace Wallin, William D. Healy, Guy

M. Whipple, Professor Lewis M. Terman of Stanford University, and many other scientists of note.

An effort on the part of these workers to relieve the mental test of the possible bias of language or any acquired knowledge, led to the creation of many pictographic, manual, mechanical, group and occupational tests.

Probably Fred Kuhlman was first in this country to see the possibilities of translating the mental age into a decimal in relation to the chronological age, to find the intelligence quotient. Especially adapted mental tests used for determining the mental condition of millions of drafted men during the World War, were of inestimable value not only in preventing certain mental breakdown and national expense, but in revealing new ideas of intelligence levels.

It may be assumed that in spite of Binet's statement that the scale is made to aid observation but by no means to replace it, this fact has sometimes been forgotten. It is further evident at this date that the revisions of H. H. Goddard and of Lewis M. Terman are the most extensively used; also that the scientific discoveries of Binet and Simon are greater in their effect on national ideation than even in their practical application.

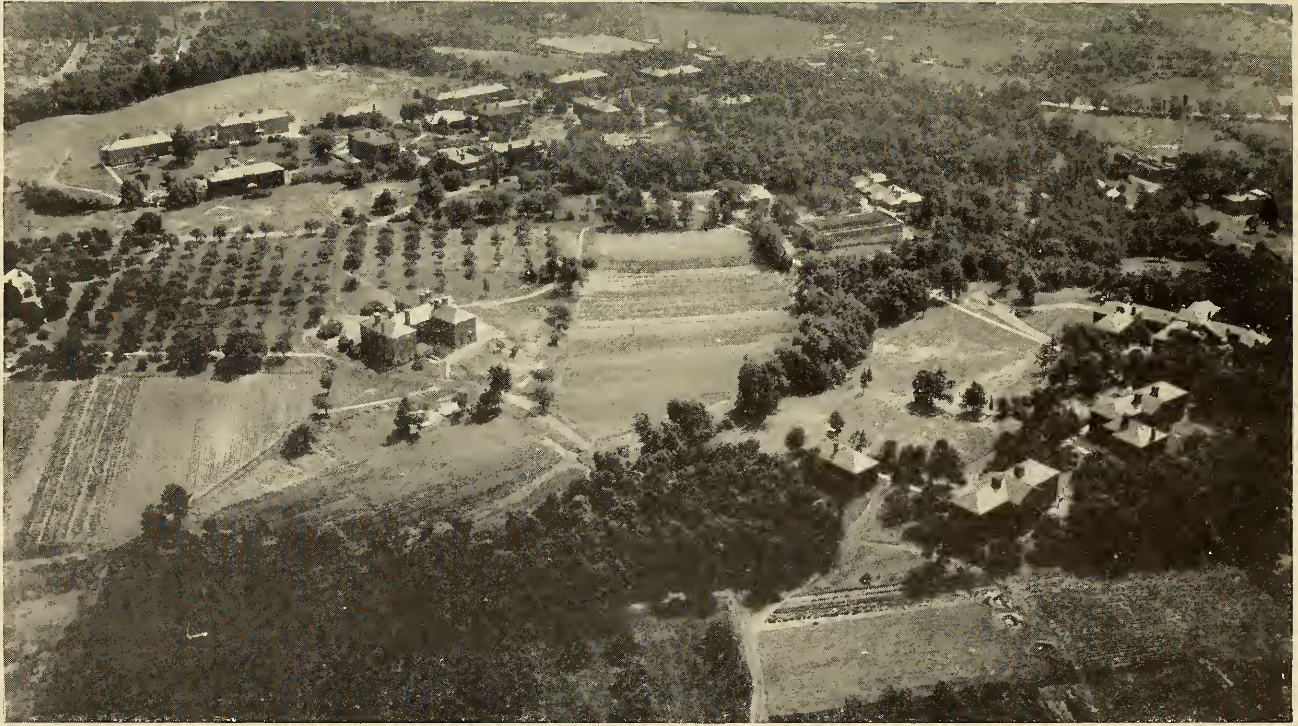
From 1904–1908, coincident with the work of Binet and Simon in France, was the extensive inquiry of the British Royal Commission, which contribution gave much new evidence, especially by defining the different grades of mental deficiency and in estimating their numbers.

In 1910 Dr. H. H. Goddard, as member of a committee of the American Association for the Study of the Feeble-minded, suggested the term "moron" as a suitable name to be applied to the high-grade mentally defective person. Dr. Goddard's suggestion was adopted and also a classification of idiots, imbeciles and morons based on mental age.

Among special lines of investigation of significance should be mentioned the work of Charles P. Davenport, Cold Springs Harbor, New York, in 1912, which was reported in his paper "The Origin and Control of Mental Defectiveness." His researches with the Mongolian types have added somewhat to our knowledge of that particular class of defectives.

In that field which one would naturally suppose to be richest in revelation the scientific workers have not been numerous. Of foreign pathologists D. M. Bourneville of Paris and C. Hammarberg of Sweden, are prominent contributors.

In America A. W. Wilmarth reported to the American Association for the Study of the Feeble-minded in 1890 his pathological researches on "One Hundred Brains of Feeble-minded



AIRPLANE VIEW OF FERNALD STATE SCHOOL AT WALTHAM

Children." The Waverley Researches of Dr. Walter E. Fernald in collaboration with E. E. Southard and Annie E. Taft were published in 1918.

Of the integrating forces and purposes furthering the care of the feeble-minded should be mentioned two organizations — the American Association for the Study of the Feeble-minded and the National Committee for Mental Hygiene.

In 1876 the day of experimental schools had passed. The initial move by the State of Iowa toward the care of her feeble-minded was for a permanent institution. The self-reliant superintendents of that day believed their beneficent labor of developing juvenile aments of more importance than that of caring for adult dements, and for the furtherance of the work decided to form an association. They accordingly met at the Pennsylvania Training School, Media, Pa., June 6, 1876, and organized the Association of Medical Officers of American Institutions for Idiotic and Feeble-minded Persons. Dr. Edouard Seguin was made President, Dr. I. N. Kerlin, Secretary-Treasurer. Dr. Kerlin was followed in the office of Secretary and Treasurer by Dr. A. C. Rogers, Superintendent at Faribault, Minn., who also faithfully edited the papers and proceedings of this Association up to the time of his death, January 2, 1917, and in the papers of this organization may be found much of the existing information on this subject. In June, 1906, the name of the organization was changed to the American Association for the Study of the Feeble-minded.

The forces working for mental hygiene had been gathering momentum for many years before this term was suggested for their organized activities by Dr. Adolph Meyer. The American Psychiatric Association was formed as early as 1844. From their origins these societies had held annual meetings, studied their problems and published their findings. The knowledge of these two bodies had not, however, properly reached the general public for want of a suitable medium. Such a national liaison organization was to be brought into being through the experiences and efforts of Clifford W. Beers. Mr. Beers is a native of Connecticut and a graduate of her noted college. Recovering from a mental illness he was imbued with the feeling that a permanent agency for reform and education in the field of nervous and mental disease was one of the great needs of the day. He wrote and in March, 1908, published a book entitled "A Mind that Found Itself," which was widely read. Mr. Beers then wrote a prospectus of a national committee, which prospectus was held in abeyance until after the Connecticut Society for Mental Hygiene was formed, May 6, 1909, and a few months later through the active and sympathetic co-operation of a group of great men and women the National Committee for Mental Hygiene was founded February, 1909.

For twenty years this organization has been systematically gathering statistics and information, distributing thousands of pamphlets to all parts of the country, making extensive surveys, establishing child guidance clinics, promoting a better legal understanding with mental defect and disease, encouraging psychiatric, psychological and sociological education, co-ordinating state and national movements in behalf of the mentally defective and diseased, striving to create public interest in mental health, and extending its chapters throughout the world.

The decade beginning 1910 witnessed many evolutionary developmental phases in the care of the feeble-minded. There was a marked increase in the number of state and private institutions established; the development in the impetus to colonization notably by Dr. W. E. Fernald of Waverley and Dr. Charles Bernstein of Rome, New York; the placement of trained, high-grade feeble-minded parolees under supervision was inaugurated by Dr. George L. Wallace of Wrentham State School and Dr. Charles Bernstein of Rome and Dr. W. E. Fernald of Waverley. By 1920 75% of all the state schools for the feeble-minded in the United States were placing parolees at gainful occupation.

The first special class in this country was established in Providence, Rhode Island, in 1896, but the growth of this work in Europe had been much more rapid than in this country, until it received the impetus and influence of the idea of mental age levels of intelligence. From 1910 on, the extension of this work was rapid. Nineteen twenty-nine recorded special classes for backward and feeble-minded children in 109 cities in 29 states. During this decade many states adopted sociological laws such as laws prohibiting or annulling the marriage of the mentally diseased and defective, and eugenical sterilization. Sterilization was first legalized in Indiana in 1907. In 1906 Dr. H. H. Laughlin of the Eugenics Record Office, Cold Spring Harbor, New York, made a statistical summary of sterilizing laws in twenty-three states, compiled the operations done to date and outlined what he considered a constitutionally acceptable law.

The development of the care of the feeble-minded in the United States is most clearly illustrated by the statistics of the period from 1890 to 1916, which demonstrated that while the population of the United States increased 26% the feeble-minded and epileptic under care increased 753%.

As an egg must be incubated before it is hatched and an idea maturated before it is expressed in action, it seems in historic retrospection that an actor is usually preparing while the stage scenery is being arranged.

From 1882 until 1887, while the Massachusetts School for Feeble-minded was developing quietly in South Boston, Walter Elmore Fernald, a native of Kittery, Maine, and a graduate of Bowdoin Medical College, was assistant physician at the State Hospital, Mendota, Wisconsin, unknowingly preparing himself for the superintendency of the Massachusetts School to which he was called in 1887. For the next thirty-seven years this superintendent was to labor prodigiously in an ever-widening field with the noble purpose of the betterment of his fellow-man; to become an expert and an internationally known leader in his profession.

His first great work was that of building a new institution for the Massachusetts School for Feeble-minded on its present site, and of making this school, in construction and administrative efficiency, in education and training, in care and kindly spirit, a model for the instruction and imitation of the thousands who visited it annually. Thinkers and educators of ability from other states visited Waverley only to return home and send for Dr. Fernald to talk to their committees and advise their state in making provision for the care of their feeble-minded.

In 1891 Dr. Fernald established a free weekly out-patient clinic at Waverley in which, years before the discovery of the mental rating scale, were examined thousands of patients. These clinics were so organized that each member of the staff participated in the examination. The results were summarized by Dr. Fernald who examined the patient and interviewed the parents. This work led, in its extension, to the community clinic. This work was also the forerunner of the special class in the public schools, for it often happened that the parents wished to keep at home the child whom the clinic had proved to be mentally deficient and ofttimes such child had to be kept at home for want of room in the institutions.

During the pioneer years of institutional care the proportion of children received on account of idiocy and bad behavior was large, and the opinion gained of this class was consequently poor. During those years the opinion prevailed that all feeble-minded persons should be segregated for life. Dr. Fernald early named the troublesome variety, referred to by the early superintendents as moral imbeciles "defective delinquents."

In 1916 he made a survey of all who had been discharged from his school for a period of twenty-five years. In publishing his findings he pointed out that there were good feeble-minded and bad feeble-minded, and thereafter often referred to the older views of life detention as "the legend of the feeble-minded."

Dr. Fernald early accepted and utilized the amplified work of Binet and Simon, but shortly maintained that no good judge should render a decision until all the evidence was heard, and that no physician should make a diagnosis and ignore any of the symptoms. On this reasoning he worked out, and in 1913 demonstrated his "Ten Fields of Inquiry" which have been generally accepted as of great diagnostic value.

If these few accomplishments illustrate the thoroughness of this leader they convey little comprehension of the extent of his work. Dr. Fernald was continually instructing and inspiring new men and women in the field to investigation. He collaborated extensively with many — as an instance the work of his "Waverley Researches" which were carried on for fifteen or more years. He was President of the Massachusetts Society of Psychiatry, the New England Society of Psychiatry, the Boston School of Occupational Therapy, a member of the Executive Committee of the Massachusetts Society for Mental Hygiene from its beginning, Chairman of the Committee of Mental Deficiency, and a member of the Executive Committee of the National Committee for Mental Hygiene. He was Associate Professor of Mental Disease at Tufts College, lecturer on The Mental Diseases of Children at Harvard University Graduate School, a member of the Massachusetts Vice Commission, President of the American Association for the Study of the Feeble-minded in 1893 and again in 1924.

He was sponsor for the law relating to the census and registration of the feeble-minded in Massachusetts. He was a member of the Committee of the American Association for the Study of the Feeble-minded which collaborated with the National Committee for Mental Hygiene to co-operate with the United States Government in producing our present card and system of the census taking for the feeble-minded and epileptic.

He was sponsor for the law permitting the parole of feeble-minded from the state schools; a law legally recognizing the defective delinquent and making separate institutional provision for them; a law requiring that an inquiry shall be made into the mental status of prisoners; a law establishing psychiatric clinics for the examination of retarded children in the public schools. Having sponsored this last-mentioned law Dr. Fernald looked forward with zeal and hope to realizing its operation, and the last week of his life, preceding his short illness, was given to intensive instruction in diagnosticating feeble-mindedness, to a class of physicians from other Massachusetts state institutions.

As a young man Dr. Fernald knew intimately the able and well-chosen pioneer superintendents, such men of long service as Seguin, the Wilburs, Kerlin, Doren, Osborne, Wilmarth, Brown, Knight, Richards, Carson, Rogers, Smith, Fish and Beaton of Orillia, Canada.

Being a ready listener with an extremely retentive memory his thirty-seven year period of service privileged him to be the synthetizer and transmitter of an invaluable fund of knowledge and experience from the old men of his youth to the young associates of his maturity.

No history can provide us a more sublime inspiration than the acts and living example of a monarch in thought's dominion who has devoted his life to the love and care of his fellow-man.

TEMPLETON COLONY

By Ransom A. Greene, M.D.,
Superintendent, Walter E. Fernald State School

According to a report in October, 1918, by the New York Committee on Feeble-Mindedness, consisting of Mr. Homer Folks, Mr. R. Bayard Cutting, Miss Eleanor Johnson, Mr. Franklin B. Kirkbride, Miss Maude E. Miner, Prof. Paul Monroe and Dr. Thomas W. Salmon, there is a foreword stating that "in the last few years there has been considerable attention devoted to the possibility of supplementing ordinary institutional care of mental defectives by the so-called colony system." The term "colony" is subject to definition as devised by this committee. They make the following stipulations as to their determination of what constitutes a colony and say that "any extra-institutional group of defectives of any grade working under supervision either as contributing to their support by the State or for personal remuneration, or both, and that such colonies may be of the farm, reforestation, industrial or domestic type."

In their history of colonization they attribute the first extra-institutional group of defectives as belonging to the State of Indiana and that colonization was begun at the Indiana School for Feeble-Minded Youth in 1893 on leased land, and afterwards permanently established on a farm purchased by the State in 1895.

In point of time, Massachusetts stands next in order, but the report states that the results achieved at the Templeton Colonies under the leadership of Dr. Walter E. Fernald stand second to none. They also state that New Jersey is third and that "it began the experiment with the colony plan in 1913 with the opening of the Menantico Colony in connection with the Vineland Institution."

I find, however, in searching the literature that in the report of the Trustees of the Massachusetts School for Idiotic and Feeble-Minded Youth dated 1879 and signed by the Assistant Superintendent, George G. Tarbell, he says, "I cannot close this report without again calling your attention to the great need of more room for out-of-door work for our boys." The institution known as the Massachusetts School for Idiotic and Feeble-Minded Youth, was then located in South Boston. In the report of Dr. Tarbell for 1880, I find the following statement: "Before closing my report I must again respectfully but earnestly call your attention to the subject I dwelt upon in my last report, the urgent need of land upon which to employ our larger boys." He further states that while "they are feeble-minded, yet, I believe, after carefully looking over the individual members of our school that twenty per cent of our boys could, under proper supervision, do work enough upon a farm to pay for their keeping," and while the question might instantly arise "why they are not kept at home: the answer is that they do not there have proper supervision. Perhaps they have no home but the almshouse; they run in streets; they have no occupation; they are made worse by the gibes and teasing of other boys."

In the report of the Trustees of this school for feeble-minded and idiotic children in 1881, a statement is made that an "estate in the country will make the best home for unimprovables is too obvious for argument." In this same report mention is made of a new farm purchased at a cost of $5,000. which has been acquired, partly in the town of Medfield and partly in the town of Dover, within about two miles of Medfield Village. It is quite obvious from these reports that the intentions of the Trustees of the Institution at that time were to ultimately move the entire institution to this location.

In the report of 1881, signed by Dr. George G. Tarbell, then assistant superintendent, he states in reference to the farmhouse purchased at Medfield and Dover that the building "will hold fifteen or twenty boys. Any number more than that cannot be properly cared for in it; and I would suggest that for the present no boys be sent there who are not capable of doing some useful work, even if little. I would also take this opportunity of urging that the present buildings should never be enlarged. The house is capable of holding all the boys that a farmer can employ advantageously." He also says that "perhaps it is a little premature to prophesy concerning the farm but I have no hesitation in expressing my belief that in a very short time the farm, if well managed, will provide all the milk, vegetables and farm products used in the whole institution without other labor than that of the boys."

In the report of the Trustees, dated 1883, it is stated that the "Howe Farm at Medfield has accommodated fifteen boys during the last summer but only nine or ten of them will probably remain there during the winter because of the absence of outside work and because a few of them may be more improved by school discipline."

In the report in 1885, the Trustees stated that "in 1881, also, the accommodations and scope of the institution were increased by the purchase of a farm in a beautiful and healthy location, partly in Medfield and partly in Dover, about two miles from

Medfield Village. Training to farm labor is everywhere recognized as a desirable or even essential feature in the course of instruction at institutions for idiots. Our trial in this direction, taking the four years together, has satisfied us that we did well to make the purchase. Most of the boys sent to the farm have been boys who have had considerable instruction and training at the school and whom, did we not possess the farm, we should have been obliged to discharge. On the farm they have learned to work and that they must work. And to work, before idiots go out into the world, should become with them a habit, so far as possible; and it seems that the routine of farm labor is that to which they most easily become accustomed."

From the above historical facts as presented by authentic reports of the institution, it is quite obvious to me that this attempt on the part of the Trustees and the Assistant Superintendent of the Massachusetts School for Idiotic and Feeble-Minded Youth was a previous attempt at colonization to that of the Colony in Indiana as attributed by the New York Committee. This was twelve years at least ahead of the Indiana Colonization.

Quoting from the report of Asbury G. Smith, Superintendent, dated 1885, he states that "at the Howe Farm in Medfield, the progress so gratifying at the beginning of the year was, in August, seriously interrupted by the appearance of disease; somewhat among the boys but chiefly in the family of the farmer, causing very serious results. Several careful inspections of the buildings and premises have been made to ascertain if any local cause for the origin of the disease existed. Everything practicable has been done to place beyond a doubt the possibility of the existence of any source of trouble. The water has been analyzed and found to be free from any evidence of pollution. Inasmuch, however, as old wells may be objects of suspicion and at any time become impure, it is recommended by the Health Officer of the State Board of Health, Lunacy and Charity, that a new well be sunk farther away from the buildings and farther up the slope above the house. There are additional reasons why this should be done, for in seasons of drought the present supply fails altogether and all the water has to be carted from a brook about half a mile away. The work done at the farm has been in the main satisfactory and we have seen that the large boys could perform well much of the labor in caring for the stock and crops."

In the report of 1885, signed by Asbury G. Smith and by the trustees, there is much evidence presented as to the necessity for abandoning the school in South Boston and the establishment of a new school in the country.

In the year 1887 in the report signed by the trustees it is recorded that the trustees have elected Walter E. Fernald, M.D., for the first resident superintendent of the school and he took charge on the 19th of October, 1887.

In this same year the Legislature made an appropriation of $20,000 to purchase a new site for the school. This had long been regarded by many of the trustees as the most pressing want of the institution and two estates in three lots adjoining each other in the easterly part of Waltham, not far from the Waverley stations of the Fitchburg and Massachusetts Central Railroads and containing a little more than seventy-two acres, have been purchased for $12,211.98.

In this same report it is stated that "the farm at Medfield has proved how much can be done for such boys as ours by employing them out of doors, and when its work can be transferred to Waltham and immediately connected with other departments it will become more and more effective. We are glad to report in favor of the present management of the farm as judicious and faithful. It is no slight charge, and success in it deserves cordial recognition."

I think that the above is a rather interesting bit of history in connection with the evolution of colonization in general and particularly significant as to colonization in this institution in particular. Colonies or colonization depend upon the definition of what is meant by colony, and various colonization attempts and experiments have been made in various countries and various States for general, specific and individual purposes.

We have the experiments of colonization at Gheel for the Insane in Belgium and the Bielefeld Colony for Epileptics in Germany, and in our own State the Hospital for Epileptics at Monson, the colony for Insane at the Gardner State Colony — and other parent Mental state hospitals have branches that they call colonies. Colonies and colonization are broad subjects. They are subjects that have been given a great deal of discussion and a great deal of experimentation has been carried on with reference to all three of these types of mental disease, the psychoses, the epileptics and the feeble-minded.

In the first Annual Report by Dr. Walter E. Fernald, the following note is of interest. "The farm at Dover has been very efficiently managed by Mr. Montague. Excellent crops have been raised in spite of the backward and unfavorable season. Since the early part of the summer, the school has been entirely and amply supplied with fresh vegetables and potatoes raised on our farm. One or two large wagon-loads of produce have been sent in each week. Our larger boys have been provided with constant occupation in the care of the stock and in the cultivation of these crops. On a recent visit to the farm I found every boy at work in the fields."

In 1889 the farm at Dover was sold. The boys employed at Dover and a part of the school at South Boston were moved to Waltham.

For a period of two more years the institution consisted of the so-called custodial and training school at South Boston and the beginnings of construction at Waltham. On December 28, 1891, all the inmates from the farm at Medfield and Dover having been moved here, the entire transfer from South Boston was made and the old buildings at South Boston were abandoned on this date.

In the report of the trustees in 1896, development having been completed in Waltham to such a degree and the type of admissions of such a character, including improvable cases who return to the community and those of the imbecile type who were growing older physically, it was apparent that some outlet for them must be provided and to quote from this report: — "What, then, shall be the remedy, there being no room for further increase of members in our present location? We suggest this: that the Commonwealth shall purchase a tract of wild land of not less than 1,500 acres; that from time to time, as occasion shall require, there shall be erected upon this land dwelling-houses, barns, storehouses and shops, small rather than large, and of moderate cost; and that such estate, at first so equipped only to a limited extent, shall be appropriated to the reception, care and maintenance of adult male cases that shall have received a course of training at the school at Waltham. Let our purchase be a wilderness. What is wanted is a place for work. When we take it, let there be no trace of cultivation. The desert shall rejoice and blossom like the rose. Another fifty years or more shall pass and a fair domain with its shapely walls, fine roads, green fields, gardens and orchards, the production of the toil of these unfortunate boys and men will be one of the glories of the Commonwealth."

It is interesting to note that this report having been signed by the Board of Trustees contains the name of Dr. Francis J. Barnes, who had been appointed to the Board of Trustees in 1893. He is, at the present time, the President of the Board of Trustees. In all these years he has faithfully served the Corporation and the Board of Trustees and is invariably present at the meetings.

In the report of 1896, the following excerpt is from the report of Dr. Fernald. "The experience of the Epileptic Colony at Bielefeld in Germany and the proposed plan of the Craig Colony for Epileptics in New York are very suggestive as to the line to be followed in making further provision for the feeble-minded in this State. A very large tract of low-priced land, at least 1,000 or 1,500 acres, might be secured in one of the sparsely settled parts of the State. No matter if the land is rough and rocky and covered with bushes, stones and stumps, — the better opportunity to utilize the capacity of this class for doing rough work. The estate should have a good water supply, an abundance of building stone, sand, gravel, clay for brickmaking, etc. On this land construct a plain, simple building to accommodate, say, 100 inmates. To this building transfer 100 of our able-bodied adult male inmates. This force could be set to work preparing for the next building. They could clear the ground, do all the levelling and grading and excavate the basement. They could build the roads, dig the trenches for water pipes and sewers, quarry the building stone and haul the stone and sand required for the building. If a little foresight was used, a locality could be selected where good clay for brickmaking could be obtained. The wood cut off the woodland would furnish fuel for burning the brick, all the work being done by the boys. The cleared land would be reclaimed and changed from wild woodland, worth practically nothing, into good grazing or perhaps tillage land. The cost of construction of the buildings necessary could be reduced to the lowest terms by the use of the building material already on the land or manufactured there, and by the utilization of the labor of the inmates in the rough work of construction. At no time in the history of an institution is the labor of its inmates so profitable as during the period of construction. The buildings themselves should be exceedingly plain and simple. What intrinsic reason is there for building a more expensive structure than middle-class people build for their own dwellings? As soon as the second building is completed, a second group of trained workers could be transferred from the school. Other buildings could be added from year to year, as needed. Large numbers of inmates would not be collected in any one building. The different groups of inmates would live in relatively small homes, practically independent of each other, each group supervised and cared for by competent attendants and officers, under the direction of the general superintendent. One group of boys would work in the vegetable gardens located near the house where they live. Another group would have the care of the barns and the stock, etc.

The milk, beef, potatoes and other vegetables, poultry, eggs and other food products ought to be produced within this community."

In 1897, the legislature appropriated a sum of $20,000 for the purchase of additional land for the use of the school.

In 1899, the purchase of land for Templeton Colony was completed, and consists of a territory three miles long and a mile more or less wide, consisting of seventeen parcels of land and containing in all 1,660 acres, lying mostly in Templeton.

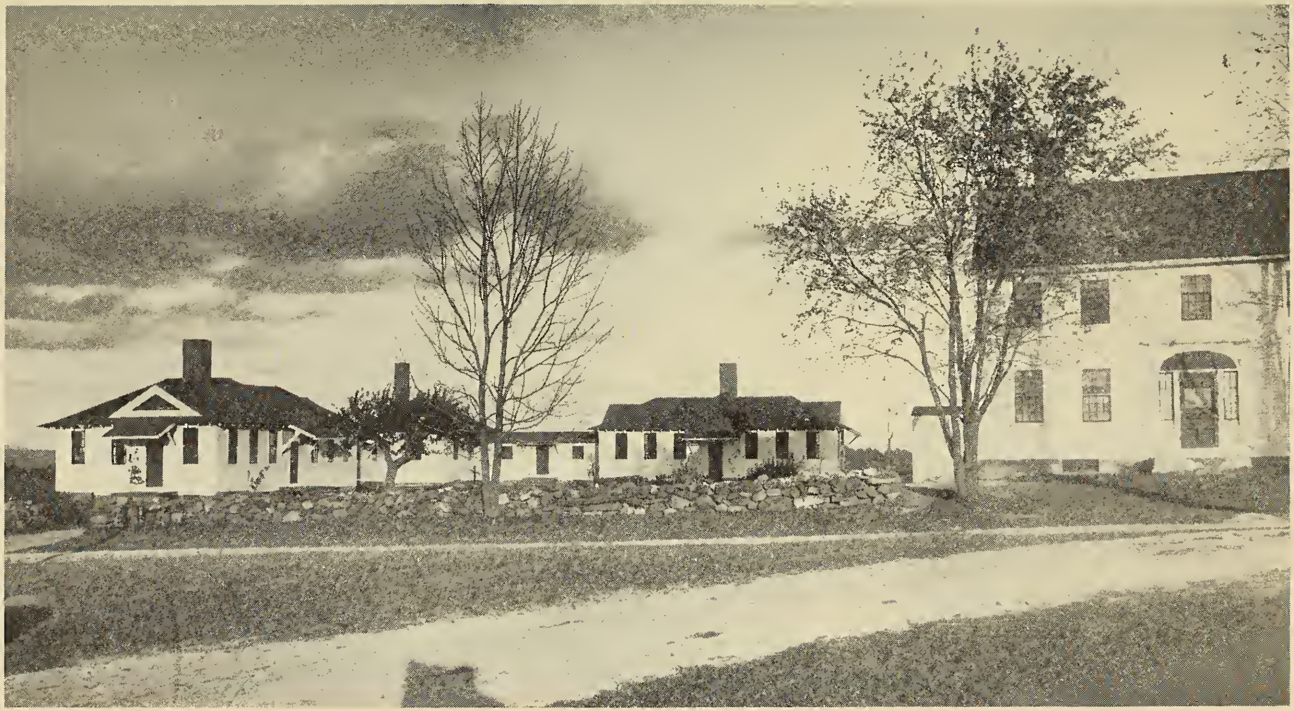
In 1899, Dr. Fernald recommended that suitable provision be made for the transfer of 100 able-bodied males to our Templeton Estate in the spring of 1900.

Forty-seven boys first went to Templeton in two detachments, the first early in May and the second in July in 1900. "Since their arrival they have lived, as it were, in a camp, taking their meals in a temporary shed open on one side to the weather and sleeping in a barn. One of the old farmhouses has served for an office building. The boys now take their meals in it temporarily and are housed at night in an old dwelling house near by."

In this same year the property at South Boston was sold. Thus it has come about that a cycle of history has repeated itself. The original school at South Boston, the obvious necessity for the employment of the trained feeble-minded and the outlet provided for this by the purchase of the farm and land at Medfield; the construction of the new institution at Waltham and the necessity for the outlet for the trained feeble-minded who have become adults but incapable of returning to community life; the purchase again of a farm in the western part of the State; the transformation of this farm from the roughness in which nature left it and its cultivation by the labors of these boys into a utilitarian and productive use for the parent institution at Waltham. From time to time there have been added to the original purchase of the Templeton Colony various tracts of wild land until, at the present time, we own about 1,875 acres. This is divided into four colonies, two colonies housing fifty inmates each and two housing one hundred each.

In the Trustees' Report for 1903, the following statement is made: — "A few years since, finding that there were no suitable places to which many of our boys graduating from the school department could be sent, we founded our colony at Templeton for big boys and men, — a repetition on an extensive scale of our former experiment at the Howe farm," which proclaims that the Howe Farm was actually a Colony.

I think it well at this point to quote from an article in the *Boston Sunday Globe* of June 3, 1906, in which the writer in



NARRAGANSETT COLONY
One of the four groups at Templeton Colony

describing Templeton Colony attributes the idea of this Colony as originating with Dr. Walter E. Fernald and that "it had been the experience of the superintendent that while the adult feeble-minded could be developed to a degree of usefulness they could not be depended upon to earn their living in the outside world. The plan adopted at Templeton Colony was to construct a plain simple building to provide for fifty inmates. The farm was selected with an idea to a good water supply, an abundance of building stone, sand, gravel, clay for brick-making, and wood for fuel in burning brick and heating the buildings. The result at Templeton the first summer showed that the work of the wards exceeded the average amount of work done in the same length of time by any equal number of laborers engaged upon a public work. In the preliminary work with shovel, pick and crowbar they not only excelled but were cheerful and happy. Some were engaged in laying pipe to bring water from a reservoir of their own construction at the top of a hill, while others were laying cellar walls." That they were healthy is evidenced by the fact that in the first eighteen months the total doctor's bills for the Colony amounted to $1, and paid for the dressing of a cut finger.

The following description from the Superintendent's Report for 1912 is of interest as to the accomplishments of a colonization for this type of mental defectives. "The farm colony at Templeton continues to demonstrate the desirability and feasibility of housing able-bodied male imbeciles in simple, low-cost dwellings, and of providing heathful, profitable utilization of their labor in the clearing of wild land and the raising of crops. We have shipped thirteen full carloads of potatoes and other vegetables to the parent school at Waverley. Among our farm products this year were 873 barrels of apples, 304,405 quarts of milk, 6,513 bushels of potatoes, 16,224 pounds of pork, 17,000 pounds of beef, 661 barrels of turnips, 47,624 pounds of cabbage, etc. Besides raising all the milk needed at the colony we are raising 61 head of young stock to be added to our herd of milch cows at Waverley. The farming operations of the entire colony under Mr. Donnell's skillful supervision have been raised to a high state of efficiency. It would be hard to overstate the content and happiness and well-being of the boys at the colony."

The original purchase of land for Templeton Colony was at the rate of $10.00 per acre, and the construction for housing as estimated up to 1914, including the land, was at the rate of $378.00 per capita to provide for three hundred inmates.

At the present time (1929) we have at the Colony 316 patients. The average mental age of these inmates by psychological tests made within a very short time is somewhat less than six years.

The varieties of occupations furnished make the Colony a placement that is utilitarian, economical and most satisfactory for boys of this mental age who have reached physically the stature of an adult but retain the mind of a child. I am sure that it is an ideal method for their care.

To summarize: The Colony emphasizes the vision of Dr. Fernald, his ability as an educator, and his humanitarian attitude for the feeble-minded. The results show his accomplishments as an administrator. The example he has set and the influence he has cast through this work alone — it is impossible to estimate — either as to the extent it has reached in area or the numbers of human beings it has influenced.

As stated in the beginning of this historical sketch of the Templeton Colony, colonization is of many types and varieties. It has been my experience to have had many contacts with colonization of various kinds for the insane, the epileptic and the feeble-minded, and while I am unalterably opposed to the colonization idea in general, the colonization of the feeble-minded who have been trained and are of such a type that the limit of training is not sufficient to warrant their return to community life in such a Colony as Dr. Fernald devised at Templeton meets the needs in a most ideal manner.

The Future. In the last year we have added to our armament at the Colony electricity for lighting facilities, including all houses, dormitories and barns. Some power equipment has been added principally, as yet, for the purpose of pumping water which has previously all been done by hand. In the last three years we have been greatly aided by the addition of heating units through which we have economized on the time spent in labor by the boys in gathering wood to keep warm in winter. All cooking, as yet, is carried on by means of wood fires but the heating of the houses is done largely by steam, and within a short period of time the cooking and heating will all be accomplished by steam thus releasing the labor of boys for increasing the pasturage for cattle.

We have by recent purchases of land added lots, so that at the present time there are no encroachments on our property lines to possibly interfere with our seclusion of the inmates and the exclusion of outsiders through the necessity of giving a right of way for other reasons. We have also by recent purchases protected our water rights so that we can anticipate future developments both for power and water supply. Inevitably, in the future there will come a repetition of history — and with the increasing of colonization and the fertilization of the soil, there will come a time when it will be necessary to install driven wells or other water supply that will be safe for domestic use.

The area of land we now hold can be, with the present number of population, increased in its cultivated acreage, adding a much needed land for the growing of hay and at the same time, with the use of electricity and steam furnished by coal, conserve an already very valuable lumber tract. This region naturally lends itself to the growing of timber because of the fact that it is almost surrounded by forestation fostered by the Commonwealth. Lumber that can be grown on this land can be economically utilized at this institution. In this present year, we have lumbered from our own land 150,000 feet of pine and hard wood that we will saw in our own mill and under our own power into board feet that are to be used by the parent institution for construction. There seems to be sufficient area of land to furnish economically lumber for our projects for ages to come, as far as our own institution is concerned, and possibly be a source of supply for other institutions.

The plea for an outlet for utilitarian and useful labor for the inmates, as indicated in the early reports, is provided in this colony for years to come in the reclamation of land and in the scientific lumbering of our forested areas, and will furnish ample outlet for the development of the type of mentally defective that will accrue in this institution — even though the institution increases its size to two thousand bed capacity. I would be very much opposed to increasing the capacity of our Colony, for the additional personnel for an increased number of patients would demand hospital facilities, infirmary care, culinary store, laundry engineering and mechanical facilities that would create an institution, we would again begin our "Round Robin" and cease to be a Colony and become another institution.

DEVELOPMENT OF INSTITUTIONAL CARE FOR THE FEEBLE-MINDED

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The institutional care of the feeble-minded in the beginning was furnished by the insane asylums. Indeed this is not surprising, since the term idiotism or idiocy included not only what we now know as idiocy but primary dementia as well. Pinel defines idiotism as an obliteration more or less complete of the functions of the understanding and of the affections of the heart. (1 — op. cit., p. 10.) And from the cases cited in his *Traité Medico — philosophique sur l'aliénation ou la Manie,* it is evident that when he used the term idiotism he had more in mind mental conditions which we designate as schizophrenia than idiocy. It is but natural then that the feeble-minded should be cared for with the insane and given the same treatment. Furthermore, when the feeble-minded became so anti-social in their conduct and tendencies that they could not be cared for in their families or in the community in general, this was the only relief that could then be afforded them. And even today this method obtains in States where special institutions are not available.

Insanity up to this time had been considered a dreadful plague and the insane "were considered in the main, harmful and malicious creatures. They were imprisoned and confounded with criminals of all sorts; in short they were treated most inhumanly. Nearly everywhere they were chained with irons and heavily fettered, were kept in dark, narrow and unhealthy prisons. There they dragged along a miserable existence, given up to the brutality of the gaolers who had not the slightest pity for them; there they were also exposed to the mockeries and insults of a curious and indifferent crowd, for whom the sight of their misery became an object of amusement and recreation." (6 — op. cit., p. 511.) Such were the conditions when Pinel, physician of Bicetre, in 1793 began his great work to humanize the care of the insane, to strike off their chains and abolish their dungeons.

Yet twenty-five years later the "progress of his ideas had not advanced one step." For we find Esquirol, his pupil, who was commissioned to make an inquiry into the conditions of the insane and their establishments reporting as follows:

> "These unfortunate people are treated worse than criminals and are reduced to a condition worse than animals. I have

> seen them naked, covered with rags, and having only straw to protect themselves against the cold, moisture, and the hard stones they lie upon; deprived of air, of water to quench their thirst, and of all the necessities of life; given up to mere gaolers and left to their brutal surveillance. I have seen them in their narrow and filthy cells, without light and air, fastened with chains in these dens in which we would not keep beasts." (6 — op. cit., p. 512.)

Such were the conditions in the institutions for the care of the idiotic and insane in France in 1818. And we are told they were the same everywhere in Europe.

Esquirol, however, made another advance. He differentiated idiocy from dementia. "Idiocy," he said, "is a state in which the intellectual faculties are never manifested when they have not developed to such an extent that they can acquire knowledge by education as do individuals of his own age, place, and condition." (1 — op. cit., p. 20–21.) However, idiocy presents two very marked differences relative to the degree of development of the intelligence. In the first, the intelligence and affective faculties have developed only up to a certain degree. This defect characterizes imbecility. In the second, these faculties show nothing or almost nothing. These are the idiots or cretins. The imbeciles can do rough, coarse work. They can learn to read, write, and a little music but very imperfectly. In the insane hospitals they are servants of everybody in the institution. (1 — op. cit., p. 24, 25, 27.)

The next step in the development of the care of the feeble-minded was taken by Dr. Belhomme, who published his *Essai sur l'Idiotie* in 1824. He had been a physician at the Salpetriere for nineteen years and had become possessed of the idea that it was possible to improve the unfortunate conditions of the idiots and that some sort of an education could be given them. He began to teach them and came to the conclusion that idiots were teachable, depending on the degree of idiocy. He points out that later workers in this field ignored the fact that it was "from the Salpetriere and from Esquirol that arose the sparks that lit the torch which illumines them." (1 — op. cit., p. 45.) He distinguished three degrees of imbecility and two of idiocy. Individuals vary in degrees of mental development so they can receive only the education which is *en rapport* with that degree. So it is necessary to determine the range or dose of intelligence before one attempts to instruct them. Some have inclinations or propensities in one direction and some in another. He found that imbeciles could learn to read, write, count, and learn music but not well. They needed continual supervision and must be urged to study. Those who could not learn to read could learn some manual occupation or industry but were mediocre. In hospitals they were useful in work about the institution. Some of the most stupid idiots showed actions which indicated a certain degree of intelligence. (1 — op. cit., p. 66, 67.)

Ferrus followed Esquirol in the reform movement of the insane. He was made inspector general of the insane asylums of France. In 1829 Ferrus, while Physician in Chief of the Hospital of Bicetre, organized a school where he brought together the children and adolescents of the hospital who seemed to him to possess some mental resources. He taught them habits of order and to work, also to read, write, and cipher. He gave them gymnastic exercises. He brought them out of their lazy habits and counteracted and corrected their bad habits and strengthened by every means possible their weak constitutions. (1 — op. cit., p. 268, 269; 2 — op. cit., p. 85.) He it was who originated occupational therapy, for he was the first to think of giving the insane work to do. In 1832 he established a farm at St. Anne. The work on this farm was done by patients of the Bicetre.

In 1831 Falret established a school in Salpetriere made up of eighty idiots and imbeciles selected from the population of that institution. It is interesting to note that a little later he established a similar school for the acute insane. In both cases his efforts were successful. The movement spread to the other insane hospitals of Paris. He also had a school at Bicetre, for he says, "it is not necessary to believe *a priori* that idiots and imbeciles offer no chances of improvement. I have been able to prove the contrary in a sort of school which I established among the idiots of Bicetre." (1 — op. cit., p. 249.)

The results were so successful that in 1839 Leuret and F. Voisin organized on a "grand scale" a system of instruction for their "unhappy patients." In 1833 we find Voisin organizing a similar service for idiots in the Hospital of the Rue de Severes. And the next year he organized a special school for mental defectives. (1 — op. cit., p. 270.) In 1839 Voisin was made physician to the Hospital of the Bicetre. (2 — op. cit., p. 36.) He segregated the mental defectives from the insane and placed them in a building which had the advantage of being separated a little from the main hospital. Here he was to attempt, by instruction and special education on a "grand scale," to lead these unfortunates to approximate, as much as possible, the ordinary life of their kind. Yet he was not to forget that it was with an incomplete person that he dealt and that one could neither now or ever raise them to our level but we must descend from our intellectual heights and put ourselves as much as possible *en rapport* with the weakness of their minds. This alone will be the price of success. (1 — op. cit., p. 271.)

The preliminary work having been done and the ground cleared, a school-master was now necessary for the work to progress. So Ferrus and Voisin recommended Edouard Seguin, whose distinguished work they had observed, to the General Council of Hospitals, and he was appointed master of the children in Bicetre, and took up his work there in 1842.

The philosophy of the early nineteenth century in France was sensationalism. The Abbe de Condillac at first basing his thinking on the work of Locke later found reflection unnecessary and came to the conclusion that sensations were the only source of our ideas. He imagined a marble statue which he in turn endowed with the senses beginning with smell and attempted to demonstrate how all our ideas originated and are developed. (9.) This was the philosophy of the Revolution, the Terror, and the Empire, and inspired the "Contrat Social" and the "Emile" of Rousseau.

In 1798, some hunters found a boy running wild through the forests of the Province of Aveyron. He was eventually captured and Bonaterre, a Professor of Natural History of the Province, wrote a pamphlet describing him. A boy eleven or twelve years old, who chose his food by smell, drank by lying on the ground with his chin in the water, walked on all four, fought with his teeth, tore off his clothes, and tried constantly to escape. He could not talk, yet was pleased at receiving caresses. Bonaterre thought, "a phenomena like this would furnish to philosophy and natural history important notions on the original constitution of man and on the development of his primitive faculties." (7 — op. cit., p. 50.) Evidently the "marble statue" of Condillac had been found.

He became an object of great interest to the intellectual men of the day as well as a curiosity to the general populace. He was taken to Paris and placed in the school for the deaf. The teachers here were unable to do anything with him and he was left to wander around the halls of this institution. However, he came under the observation of Itard, the physician of the school. And when his case came up for discussion in the Academy of Medicine, Itard and Pinel were the chief disputants. Pinel claimed he was an idiot and hence unteachable; Itard, that he was wild and untaught, a creature uncontaminated by civilization, a "homo sapiens ferus." In order to "determine what might be the degree of intelligence and the nature of the ideas of a lad who deprived from his birth of all education, who had lived entirely separated from individuals of his kind" (3 — op. cit., p. XV), he undertook his education. His plan was to endear him to social life, awaken his nervous sensibility, extend the range of his ideas, teach him to speak, exercise his mind upon his physical wants. This plan, adapted to the training of a savage, he followed for a year. Then he changed it to development; first of the senses, then the intellect, then the affective faculties. (3 — op. cit., p. XXXII, XXXIX.) For four years he continued his teaching to find improvement in some respects — in others he could make no change — for the boy was a mental defective and not a savage. Itard published two reports on his work which gave him a great reputation and brought him a prize from the Emperor of Russia.

Seguin was a student of Itard who made known to Seguin his work and deemed him worthy to continue it (4 — op. cit., p. 4). But this had a different meaning to Seguin. For to Itard, immersed in his metaphysical speculations, it was the test of a philosophical theory. The world had traveled far in the first three decades of the nineteenth century; Haüy had established methods of teaching the blind; De l'Apee had demonstrated the method of teaching the deaf by the Manual Method; Pereira had shown that the deaf could be taught to speak even giving them his Gascon accent. He influenced Rousseau as shown in "Emile" — for the two men were neighbors in Paris when Pereira was developing his method. So that in the third decade of the century the substitution of the senses was a well recognized principle in special education. St. Simonism had arisen, which taught that "the whole of society ought to strive towards the amelioration of the moral and physical existence of the poorest class; society ought to organize itself in the way best adapted for attaining this end." (Ency. Brit., 13th Ed., Vol. XXIV, p. 46.)

So to Seguin, subjected to all these influences, the work of Itard meant something different — the teachableness of idiocy. Under the inspiration of Itard's work, and being a physician, he came to the idea that an idiot was " a soul shut up in imperfect organs" (5 — op. cit., p. 40), which he attempted to release by physiological methods. He threw himself with great enthusiasm into the work. He was given a chance to test his methods in the Bicetre in 1839, which was so successful that he was appointed manager of the school in 1842, as above noted. Here he developed his physiological method of education which he published in 1846 — *Traitement Moral, Hygiene, et Education des Idiots.* His "physiological education" was his great contribution to the work and his book became the text book of all future workers in this field.

The Royal Academy of Science appointed a commission to examine Seguin's school in 1843. They reported in part as follows:

> "In order to form a just idea of idiots, suppose yourself to be introduced into the asylum which they inhabit, as Mons. Seguin was, to become their teacher. What a sight! One is jumping about, bellowing and crying out; another is crouching in a corner as silent and motionless as a statue. The first one whom you address runs chattering away; the next keeps bowing to you, and kissing his hand; a third makes signs of the cross all over his body; a fourth lies flat upon the floor; a fifth gnaws his fingers and laughs wildly."
>
> "Not one can give an intelligible answer to your questions, so inarticulate is their voice. Further on are more hopeless idiots, — blind, epileptic, paralyzed. . . . Eyes have they, but they see not; ears have they, but they hear not. Their legs are unfit for standing, balancing the body, for walking, leaping or running. Their hands are unfit for feeling, seizing or moving things." . . . "This being the case, an idiot of the lowest kind being the extreme of ignorance, brutishness and perverseness, it follows that to undertake his education is the most repulsive and the most painful task." (2 — op. cit., p. 37.)

The following is an account of a visit to the school in 1848:

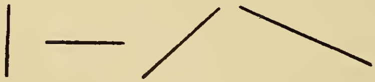
> "The number of pupils in the school has varied for some time past, from eighty to one hundred. At five o'clock they rise and pass half an hour in washing, combing and dressing; the monitors — pupils more advanced — aiding those whose instruction is recently commenced. They then pass into the hall of classes, and range themselves in a double line, no easy task for the beginners; when they sing a simple morning prayer, repeated to them by the teacher. After this, they make their first breakfast of a simple slice of bread. The class for the education of the senses now begins, and fills up the time till eight-fifteen A.M. In the first or highest division, several occupy themselves with surface and landscape drawing; and others, less advanced, with geometrical drawing upon the blackboard. The third division, divided into sections, is of those who are exercising the senses of smell, taste, sight, and observing

color and form, by the method I have before described. The sense of hearing is exercised among other means by the pupils learning to distinguish and name, while blindfolded, the natural sounds as produced by the cords of a bass-viol. Meanwhile the youngest class of eighteen or twenty is going through its elementary gymnastics of the moving power. From eight-fifteen to nine A.M. is taken up by the study of numeration and arithmetic. Here the whole school is divided into frequently changing groups, according to the various capacities developed. The lowest of all is ranged in line and taught to count aloud up to thirty; a series of sticks, balls or other material objects being given them at the time. This helps to ameliorate their speech and to stimulate to imitation those who have not that faculty. Another group is set to climb upon ladders, counting the number of rounds as they go up, and thus the muscular system and knowledge of numeration are simultaneously developed. A higher group is of those who count up to fifty, with counters, and who, by means of them, get an idea of unity, plurality, subtraction, addition and equality. A higher group still has learned to count up to one hundred and another group is learning, by means of movable figures taken from a case, the combinations of numbers. Higher still are boys working upon their slates or going through calculations upon the blackboard with a facility and precision that any pupil of Warren Colburn might envy. From nine to nine forty-five — Breakfast of soup and a plate of meat. The pupils are here seated at table and eat with fork and spoon, the more adroit aiding those less so.

Nine forty-five to ten-thirty — Recreation in open air, running, playing ball, driving hoop, or cultivating a small plat of ground, the hire of which, for three months, each one may gain by a certain number of tickets of good conduct.

Ten-thirty to eleven-fifteen — Reading class in which all take part, divided, however, into various groups as before.

Eleven-fifteen to twelve — Writing class. Here the lowest group is taught only to trace on the blackboard, with a ruler, these lines:



The next group is taught to make upon the board the rudimental characters as

/ / / C C C O O O

making the three in each line. After this they write on slates and, when further advanced, the monitor being ready to guide their hands, they write in ruled books. The highest class rules its own books and writes alternately a page of large and fine hand:

Twelve to twelve-thirty. Gymnastics.

Twelve-thirty to one. Music.

One to four forty-five. Manual labor.

In this all take part; some as shoemakers, some as carpenters, or rather cabinet-makers, and some as tillers of the ground. One of the best exercises for the body, inasmuch as it compels the idiot to walk and balance himself unaided, is that of wheeling a barrow charged with a weight proportionate to his strength. The most stupid may be soon taught this. Others more intelligent wield spade and pick-axe most energetically and profitably; but nowhere does their awakened intelligence appear more satisfactorily than in the work-shop of the cabinet-maker. When one of them has sawed through a plank or nailed together two pieces of wood, or made a box, his smile of satisfaction, the consequence of "something attempted, something done," the real result of which he can estimate, is beautiful to see. Nor is their work by any means to be despised. With one cabinet-maker as teacher and monitor, they performed last year all the work necessary for their schoolroom and dormitories as well as for a good part of the great establishment of Bicetre. At shoemaking, they show intelligence; but this is too sedentary an occupation for them. Some, however, who have left the school, work at it; but the greater number of them become farmers and gardeners.

After this manual labor, they dine and after dinner, play till six-fifteen P.M.

From six-fifteen to seven — Grammar class; the lowest group is taught to articulate syllables; the highest, as much as in any grammar school.

From seven to eight-fifteen is passed in reading to one another or in conversations and explanations with the teacher upon things which may excite the reflective power. Two evenings in the week, this hour is devoted to concert and a dance.

> After this comes the evening prayer sung by all; and then, fatigued but happy, they retire to rest.
>
> Such is a day at the school at Bicetre. Every Thursday morning the teacher takes them to walk in the country, and then inculcates elementary notions of botany, designating by their names and impressing by smell, taste and sight, the qualities of different flowers and useful vegetables which they see. At the same time he explains, by locality, the first elements of geography. On Saturday evening there is a distribution of tickets of good conduct, three of which — I have before observed — pay the rent of a garden, and one of which may buy off, for another, with the consent of the teacher, the punishment adjudged for certain slight acts of negligence. You will see at once the effect which this must have upon the generous sentiments of the pupils. The sentiment of possession is developed; the rights of property taught; but its duties and its true pleasures are at the same time impressed." (2 — op. cit., p. 45–48.)

George Sumner visited the school and sent an account of it to Dr. Samuel G. Howe of Boston. He said: —

> "During the past six months I have watched with eager interest the progress which many young idiots have made, in Paris, under the direction of Mr. Seguin and, at Bicetre, under that of Messrs. Voisin and Vallee, and have seen with no less gratification than astonishment, nearly one hundred fellow-beings who, but a short time since, were shut out from all communion with mankind, who were objects of loathing and disgust, many of whom rejected every article of clothing, others of whom, unable to stand erect, crouched themselves in corners and gave signs of life only by piteous howls, others in whom the faculty of speech had never been developed, and many whose voracious and indiscriminate gluttony satisfied itself with whatever they could lay hands upon, with the garbage thrown to swine or with their own excrements; these unfortunate beings, the rejected of humanity, I have seen properly clad, standing erect, walking, speaking, eating in an orderly manner at a common table, working quietly as carpenters and farmers; gaining by their own labor the means of existence; storing their awakened intelligence by reading one to another; exercising towards their teachers and among themselves the generous feelings of man's nature and singing in unison songs of thanksgiving!
>
> "It is a miracle, you will exclaim; and so, indeed, it is a

> miracle of intelligence, of patience, of love. When I expressed to the teacher of the school at Bicetre, M. Vallee, my gratitude and my surprise at the results of his efforts, his reply was as profound as it was beautiful and modest. *Il ne faut, Monsieur, que la patience et le desire de bien faire.* 'Patience, and the desire to do good, are all that are necessary.' More than this is necessary and I felt bound to complete his sentence by adding to it the noble motto which Don Henry of Portugal engraved on his shield and, by his conduct, justified so well, *Le talent de bien faire.* Patience and the talent as well as the desire to do good are all required; but these can all be found in the community where Laura Bridgman has been taught; and the possibility of success now fully established, it would be an insult to Massachusetts to suppose that she will not be among the first to make those efforts for her idiot population which many European states are already commencing.
>
> "The fact, I have said, is now clearly established, that idiots may be educated, that the reflective power exists within them and may be awakened by a proper system of instruction; that they may be raised from the filth in which they grovel to the attitude of men; that they may be taught different arts which will enable them to gain an honest livelihood; and that, although their intelligence may never perhaps be developed to such a point as to render them the authors of those generous ideas and great deeds which leave a stamp upon an age, yet still they may attain a respectable mediocrity and surpass, in mental power, the common peasant of many European states." (2 — op. cit., p. 38–39.)

In Chambers' Journal in 1847 appeared an account of the school written by George Sumner, a brother of Charles Sumner. He had visited Seguin's school in Paris and had written home quite extensively concerning it and its methods. This came to the attention of Dr. Hervey B. Wilbur. To an unlimited order for books he received just one — Seguin's *Traitement.* Enthused by the study of this, he received into his home in Barre, Massachusetts, in July, 1848, a feeble-minded boy and thus began the first institution for the training of the feeble-minded in the United States. Dr. Samuel G. Howe opened an experimental school in South Boston in October, 1848, which in 1851 became the Massachusetts School for Idiots and Feeble-Minded Persons.

In 1850 Seguin, on account of political reasons, emigrated to this country. He visited and aided the institutions at South Boston, Barre, Syracuse, and Randall's Island. He helped establish those in Connecticut, Ohio, and Pennsylvania. So "these institutions owe their existence wholly or in part to his School at the Hospital for Incurables or to his treatise or both." (8 — op. cit., p. 14.)

From this impetus the work spread. The New York institution (Syracuse) was opened in 1851, then followed Pennsylvania — 1852; Ohio — 1857; Connecticut — 1858; Kentucky — 1861; Illinois — 1865.

In 1876 there met together in Philadelphia Drs. Kerlin, H. B. Wilbur, Edouard Seguin, Doren, C. T. Wilbur, Knight and Brown and founded the Association of Medical Officers of American Institutions for Idiots and Feeble-Minded Persons. The object was the "discussion of questions relating to the causes, conditions and statistics of idiocy and to the management, training, and education of idiots and feeble-minded persons." (8 — op. cit., p. 4.) This association has met yearly — with one exception — since then. It has correlated and unified the work for the feeble-minded in this country. It has been the source of its inspirations and advancements. Its members have been the leaders in the development of new methods and extension of the work.

Although it had been twenty-five years since the opening of schools for the feeble-minded in this country, still there were only eight in existence, five State institutions and three managed by a private corporation with a total population of about thirteen hundred.

The principles of the institutional care of the feeble-minded were formulated by Kerlin in 1877. They were — that idiots and imbeciles should be treated separately; they can not be placed in ordinary schools; they should not be placed in insane asylums, penal institutions or almshouses; they are "better and more successfully treated in well organized institutions than is possible in their homes."

For their care he insists on thorough and rather minute classifications. The brighter grades, he thinks, can be trained to return to their families in five or ten years. The industrial training should be adjusted to the life they are to live in their own communities. However, a large number, for various reasons, will not be able to return to the home life. A large number of the idiotic, paralytic, and epileptic, are incapable of the usual education and industrial training but can be greatly improved by habit training, exercise, and medical treatment.

In organizing an institution to meet these needs he would have a board of trustees of "high personal characters, enlightened views, and with ample time." The superintendent should be a medical man appointed for merit, who should have complete control of the institution and select the help. All departments of this institution should be "tributary to the prime object of the institution — the elevation and instruction of the inmates." He specifies a central building for the school department with separate shops; a nursery or custodial building especially designed; and a hospital building.

The plans for new institutions should be approved by a board of persons skilled in the management of such institutions.

He emphasizes small dormitories, small rooms for special cases, plenty of air space, ample clothes rooms easily accessible, bathrooms with liberal accommodations, an assembly hall capable of seating all, impervious floors, fireproof stairways, the best systems of ventilation, heating and sewerage. All buildings should be "comfortable and homey." The grounds should be fenced to secure privacy. Large and convenient playgrounds should be provided with asphalt walks for the lower grades. (8 — op. cit., p. 16 fl.)

Such was the ideal institution of 1877. How true it was and how faultily carried out in the institutions afterward established only those of institution experience can really appreciate.

From these centers the work spread to other States. Although the fact that the feeble-minded were teachable had been established yet it was slow in being appreciated by the general public. So we find the next schools to be founded were started as experimental schools, Minnesota and Indiana in 1879; Kansas — 1881; California — 1884; Iowa — 1876 was an exception. From 1885 all the schools founded were established as permanent institutions.

Following the Seguin tradition the institutions were established as schools. In some, only pupils of school age could be retained, being discharged at the completion of the school age the same as normal children. On the discharge records of this time the word "cured" is often noted.

The teaching methods followed those developed by Seguin and in conformity with the physiological method we find worthy of mention — games, drill, calisthenics, singing, dancing, gymnastic and other exercises and industrial pursuits. In 1879 Dr. Knight said they could not teach trades since the parents objected to the children working, yet he thought twenty-six per cent of them could be made capable of self-support. However, "any defective child if it can be made cleanly, comfortable, careful of clothing and caring for self, should have opportunity for just such advancement." (8.) Syracuse added farming, brush and mat making, sewing — dresses, aprons, sheets, etc.

Dr. Kerlin introduced the kindergarten in 1877, for it was "adapted to proper brain and hand training" and it would also enable him to lower the age of admission. Other institutions soon followed. He also had classes in clay modelling, broom and mattress-making, cane-seating, shoe-making. Dr. Doren tells of his "garden system of training" for all who can walk, and thinks farming the best employment. Dr. Stewart speaks enthusiastically of his carpenter shop and says that all their shoes are made by their inmates and he is soon to introduce "machine sewing." Seventy-five per cent of his children were in industrial occupations. However, he observes that he is not permitted to receive idiots but does have many defective delinquents.

In 1878 Dr. Kerlin introduced instrumental music by the formation of an orchestra of twelve pieces, and he was astonished to find some boys who could not learn to read yet they could learn to play by note. Dr. Doren introduced the brass band.

It was soon found that while many were "capable of a fair degree of useful occupation under intelligent home direction" yet they were either homeless or their homes were not suitable. So arose the need of custodial institutions. The first to be established was at Newark, New York, in 1878, when seventy women were transferred from the Syracuse institution. This lead was soon followed in other States usually by opening a custodial department. "As the years pass on we note the inevitable growth of the custodial institutions supplementing the educational, and utilizing for self-support the ability previously gained. (8 — op. cit., p. 294.)

Illinois was the first, in 1881, to establish as a detached unit the farm colony for the older boys. Dr. Wilbur at Syracuse followed the next year and started a dairy.

We note next the medical phases of the work coming to the front. There was an increasing number of epileptics applying for admission. Papers dealing with the treatment of this disease appear at the association meetings. Rogers started his "epileptic table" in Iowa. Kerlin reports the establishment of a hospital branch, and Illinois soon follows. Dr. Wilmarth begins his work on the anatomy of the idiot brain. The employment of a pathologist for all institutions was suggested but never carried out.

In 1882 the main building of the Ohio institution was destroyed by fire but without the loss of life. This emphasized the importance of fireproof buildings.

The institutions were no sooner well established than "political troubles" arose. Indiana seems to have been the first, in 1885, to suffer in this respect. And the sentiment was voiced that the institutions "must be divorced from politics and the manipulations of unscrupulous politicians." This plague has done untold injury to the work throughout the years. Many times has been noted an institution in the forefront of our work to decline and practically pass out of the picture from political troubles.

The period from 1886 to 1896 was a period of expansion and growth along the lines already laid down. The New Jersey Training School and The Home for Feeble-Minded Women were both opened in 1887. Maryland followed in 1888; Washington — 1892; Rome, New York — 1894; Michigan — 1895; Wisconsin — 1896. The established institutions continued to expand. Massachusetts moved into a new plant at Waverley. Others added hospital, custodial buildings; "asylum branches"; farm colonies and hospitals for contagious diseases. New York and Ohio founded separate institutions for epileptics. A second institution for Pennsylvania was suggested. New York's institution at Syracuse changed its name and the consensus of opinion seemed to be that "Institution for Feeble-Minded" was the proper title. However, some legislatures were indifferent and there were complaints of lack of funds and loss of institution efficiency.

Along educational lines there was co-ordination of the literary and industrial lines in school work. Minnesota gave an operetta, "Babes in the Woods" for the association at its meeting in 1890. Illinois made boots and shoes. Pennsylvania introduced military tactics. They had a battalion of six companies and were impressed with its disciplinary value. Manual training was proposed as an efficient means of training. In 1894 Dr. Fernald published his paper on "Some Methods of Care and Training of the Lower Grades" in which he tells of his famous "stone pile." This still remains one of the most important contributions to the subject. (10 — op. cit., p. 450.) He also found the adult trained feeble-minded as efficient institutional helpers. And they were enabled to fill a niche in the social economy which could be nowhere else afforded them. The practice of paying the children who work was instituted and has gradually spread to all the institutions. Notice was taken of the feeble-minded children in the public schools and the problems involved.

During this decade there was increased interest in the medical problems presented by the feeble-minded. Lanndoque inaugurated in the Bicetre the operations of craniotomy for the cure of microcephalus. It was soon found ineffective, being founded on an erroneous pathological theory. Kansas became famous for the work on castration done in its institution. Channing did his work on the malformation of the palate and Osler on cerebral palsies. Cretinism was now found to be due to hypothyroidism and the treatment by thyroid feeding instituted. The combination of psychosis with feeble-mindedness was noted and a number of papers were written discussing the subject. Moral imbecility as a clinical entity, Kerlin and others attempted to establish.

The institutions were crowded and there was still call for more room. Dr. Stewart of Kentucky attempted to meet the situation by sending out his boys and girls. He "had heretofore doubted the propriety of sending girls away from the institution at any age or at any time, but my experience has been that no more of them fall into evil ways than would likely be the case with the same number of girls in other stations in life." (10 — op. cit., p. 374.) The prevailing opinion, however, was that the "incurable" girls should be kept in custody until the age of forty-five. As we have seen in the beginning the opinion was that the feeble-minded could be cured by the methods of physiological education. Consequently the children were kept in the institutions for only a limited period of residence or during the school age. Now, however, as experience increased it was coming more and more to be felt that idiots, imbeciles, and epileptics were subjects for permanent state care and that there should be legal control for the admission and discharge of inmates, or that legal commitment was desirable. At first this was made applicable only to females. Massachusetts had commitment for adult females in 1883.* Indiana in 1901, and Iowa in 1902, extended the age limit for women to forty-five. Michigan gave permanent custody to her institution in 1905; New Hampshire for females only. Wisconsin, Ohio, Pennsylvania Illinois, and other States followed with commitment laws. So the method of commitment became a rather common practice for admission with State institutions.

The tendency to centralization in the affairs of our State Governments was early applied to the control of our institutions. In 1897 Iowa was the first to establish a Board of Control for the management of her charitable and penal institutions, abolishing the various local boards. It consisted of a Board of three men who were to give their whole time to the work at a fixed salary. All purchasing was done by the Board. Other States soon adopted this feature and it soon became very popular especially through the middle west. Various activities were soon taken over by these Boards. More people were employed so that they became large organizations. The claim for economy made at their inception was soon lost sight of. Representative

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*Commitment female adult feeble-minded was provided for in Massachusetts in 1883.

ERRATUM

Footnote on page 54 should read:

"Commitment of male and female adult feeble-minded was provided for in Massachusetts in 1883."

men were at first appointed to these Boards. Soon political reasons determined their selection with consequent loss in standing. A more recent development in centralization is the establishment of a financial or permanent Budget Board to which the Board of Control is subservient. Thus the machinery of institution management increases in complexity. The effect on the institutions has been a loss of touch with the general public with an increase in the complexities of management.

Growth along educational lines was shown in the first decade of the present century in the attention given to sense-training speech defects, physical training, and domestic science. Nature study was proposed as of special value in sense-training. Entertainments were found of special value. Military drill was introduced in Rome in 1909, on Sunday afternoons, to keep the boys busy and out of mischief.

Training schools for attendants were proposed by Howe in 1895. They were established in the Minnesota Institution in 1899 and Rome, New York, in 1907.

As an outgrowth of the institutional practice "special schools" for mentally defective children were established in the larger cities. Providence, Rhode Island, was the first, about 1899. Soon followed Worcester, Massachusetts, Boston, Philadelphia and New York. It is now the approved practice in all the larger public schools.

Development along medical and scientific lines continued. Hrdlicka made his anthropological studies in Syracuse in 1898. Elyn had an anthropological laboratory in 1902. Work was done on etiology and pathology as shown by the papers presented to the association during this period. Dr. Barr published his book on "Mental Defectives, History, Treatment and Training" in 1902.

The rediscovery of the work of Mendel on heredity soon attracted the interest of the institution workers. Rogers, Barr, and Davenport made studies on heredity. The most effective contribution, however, was Goddard's "Kalikak Family," published in 1912. This work made a great impression on the general public, greatly increased its interest in the feeble-minded and so aided markedly the growth of the institutions. It helped build up research work and added field work which was begun at Vineland in 1909.

However, psychology gave the predominating feature to the development of institutional care in the first and second decades of this century. Wylie was the first to study the feeble-minded by modern psychological methods in Minnesota in 1896. His studies were published in the "Journal of Psycho-Asthenics," beginning in 1899. A scheme was devised for psychological examinations. The college laboratories took it up. Kuhlmann made his experimental studies on the children in Massachusetts institutions in 1904. Goddard came to Vineland in 1906 and took up the work. He soon began the application of the Binet-Simon tests to the feeble-minded. After establishing the validity of the tests, he made use of them as a means of classification. As a result of this work the Committee on Classification of the American Association for the Study of the Feeble-Minded made a report in 1910 which fixed the official classification of the feeble-minded. This soon came into general use and is the predominating one today.

The terms were defined chiefly by Binet-Simon tests: idiot was a mental defective with a mental age up to and including two years; imbecile had a mental age of from three to seven years; moron from seven to twelve. Moron was a new term introduced for the highest grade since it was desired to keep the term feeble-minded as a general term for the whole group. However, the committee advised combining this with the pathological classification so we have such terms as microcephalic idiot, mongol imbecile, etc. This latter recommendation seems to have been pretty generally overlooked.

This work aroused great interest and led to an intensive study of the tests by Terman, Kuhlmann and others, who modified them to a certain extent producing a series of tests very useful in classifying feeble-minded children and forecasting what they will be able to do in school and industrial work. Soon many rushed in to apply the convenient yard stick of the Binet test to public school children, inmates of reformatories, prisons, immigrants, the women of the street, and suspected criminals. The attempt was made to make the Binet test decisive for the determination of feeble-mindedness, especially by the psychologists. This view was too narrow. Numerous other tests were invented and Dr. Fernald developed his ten fields of inquiry as a method of diagnosticating feeble-mindedness, particularly of the higher type grade. And all have now come to admit that the tests furnish valuable evidence but are not specific for the higher types. (12 — op. cit., 1828, p. 219.)

This work was of the greatest importance in the development of the care of the feeble-minded. It helped to explain mental deficiency to the non-professional worker and it discovered the moron. As Dr. Fernald says: "Goddard not only named but discovered the moron and soon our overcrowded institutions were overburdened with this type." So the institutions were forced to enlarge and provide increased facilities. However, since the tests gave a means of forecasting what a defective child could do in school it enabled the institutions to eliminate a lot of useless labor in the training of the children and to concentrate it along more improvable lines as well as on the more improvable children.

The use of mental tests led to increased interest and study of defective delinquents. At first the tendency was to regard every feeble-minded person as a potential criminal. The studies in the census of the feeble-minded, which these tests enabled us to make with much greater accuracy, showed a much higher proportion of the population feeble-minded than had previously been determined. So the large number of mentally defective in the communities, the statistics of crime, and histories of discharged patients, showed that on the average feeble-minded were no more liable to get into trouble with the courts than so-called normals. However, defective delinquents were forced on the attention of the public and our institutions were compelled to admit many of this type — until special institutions could be developed. This added greatly to the responsibility of our institutions and gave rise to many new problems.

Research was greatly stimulated by this movement. Vineland established her research department in 1906, when psychological heredity, and biochemical studies were made. Minnesota laboratories opened in 1899, took on new activities with the coming of Kuhlmann in 1910. Ohio opened her research bureau in 1916. Johnstone summarizes the results of this work in New Jersey that it led to medical inspection in the public schools, special classes, retention of the feeble-minded in the institution, parole, sterilization, marriage law, and extension work. (12 — op. cit., 1914.)

The problem of the care of the feeble-minded had now become much larger. In 1912 Dr. Fernald wrote his paper on the "Burden of the Feeble-Minded." The institutions had greatly increased in size — some to a population of two thousand. Ideas on the optimum size had increased from hundreds to thousands. Some could see no limit. However, the cottage plan was favored with fireproof buildings. Stage programs were being formulated: The need for room in the institutions together with the knowledge that well-trained feeble-minded under proper conditions could be self-sustaining in society led to the development of the colony system. Dr. Bernstein at Rome, taking advantage of the abandoned farms in that section, was a leader in this. He reports the establishment of a working girls' home in 1915.

The demand for trained teachers for the special classes in the public schools led to the formation of summer schools. The

Training School at Vineland was the leader in this — 1903. Soon followed Minnesota, Rome and Syracuse, New York and Michigan. The universities took it up and courses were given at the universities of Pittsburg, Columbia, Washington, and Teachers' Colleges in Colorado.

During the past ten years the development of institutions has progressed along the lines indicated. Especially to be noted was the work on pathology done by Southard at Waverley, Massachusetts, and the formulation of a uniform method for statistics in 1919. But the greatest progress was made along the line of community care. The institution was the "pivot of a well-balanced state programme." They passed along to the community and the schools the results of their knowledge and years of experience. On account of the great number of mental defectives it was evident that the great majority could not come to the institutions. And there was no need that they should. Only the bad and neglected would demand institutional care in communities when the proper training could be afforded. The trained feeble-minded could be paroled but at the price of good behavior. It was felt that the female mental defective should not be paroled. But sterilization is coming forward as a possible solution of this problem. (12 — op. cit., 1927, p. 88.) So parole and extra institutional care were prominent features of the work during this period. Institutional colonies as training schools for parole were developed and greatly extended, many of the larger institutions taking up this feature of the work.

Out-patient clinics were instituted and developed. Dr. Fernald at Waverley organized the first of these clinics in 1891, which grew in importance and usefulness. The next development was the traveling clinic, staffed by the institutions and going out from them to adjacent towns to make diagnosis and suggest methods of training and treatment. About 1922, Massachusetts inaugurated a State-wide public school mental clinic to examine the below grade children in the schools of that State and suggest methods of handling them. The institutions thus took a place as laboratories for the public schools.

The development of medical science led to more emphasis on medical care to place the children in the best possible shape for educational training. This training took more an industrial than scholastic trend. For it was thought best to give the child the training he could utilize and that would best fit him for the niche in society that he would occupy.

In 1876 there were eight institutions in seven States with a total population of about thirteen hundred. In 1927 there were seventy-three institutions (eight for epileptics only) in forty-three States and District of Columbia, with a total population of

57,321. Five States have no institution, viz., Arkansas, Arizona, Nevada, New Mexico and Utah. New York has six institutions; Massachusetts four; New Jersey three; and Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Maryland, Colorado and North Carolina, two each. In 1926 there were eight thousand one hundred and twenty-one first admissions. In 1923 there were eighty-nine private institutions and there were special schools in one hundred and seventy-one cities, with an enrollment of thirty-three thousand nine hundred and seventy-one pupils.

The institution that has developed through the years might be summarized as follows:

It is located near a good-sized town where it is convenient of access but with as much privacy as possible and near a railroad so trackage can be easily available. It has a large tract of land, fertile but also with areas of sand and gravel, rolling to aid sewage disposal, with woodland and a plentiful supply of good water. The buildings are of fireproof construction designed to secure plenty of sunlight and ventilation. The children's quarters are in small units or the cottage plan, with impervious floors, tiled bathrooms, large convenient clothes rooms, dormitories for sleeping, with a few single rooms. The buildings are arranged with good space between but also convenient for service of light, power and water. The cottages for boys and girls are on opposite sides of the grounds.

It is managed by a board of representative citizens. The superintendent is a physician who has complete charge of the institution and selects the help, who are responsible to him.

There is no restriction or age limit to admissions. Commitment is the rule.

The school department is the central feature of the institution. It is separately housed with a large assembly hall. It has specially trained teachers. The classes are small and change frequently. While the literary subjects are taught the emphasis will be upon the manual and industrial. It will have a kindergarten. Music will be taught and an orchestra or band will be a marked feature. Entertainments will be emphasized both for the training and their contributions to the community life.

There is a hospital with a department for contagious diseases and infirmary wards; a staff of physicians, about one for every two hundred inmates, with a consulting staff. There are pathological, clinical and psychological laboratories properly staffed. Social work and extra institutional service will be afforded in the form of out-patient or traveling clinics and summer school for teachers. A training school for attendants and nurses is provided. There are colonies for the well trained who may be subject to parole; and a parole officer for supervision of those on parole.

The farm is operated for the benefit of the institution and the training of the inmates. The chief features of this are the dairy, garden, orchards, piggery and the raising of feed for the animals.

The service buildings are ample and well equipped and designed with the idea of future growth — power house, laundry, stores, cold storage and kitchens. The kitchens and the school are the heart and center of the institution for there lie the comfort and happiness of the children.

The custodial department will be large, for many will be unable to go home to relatives or be paroled. However, it offers a useful life work for the less capable and they will have a part in the community life which the other departments of the institution afford.

The institution is large in population for it is only in a large institution that many of the above outlined features of service can be afforded.

To be doing what one wants to do and to be comfortable is to be happy. Happiness is what such an institution offers to the feeble-minded.

BIBLIOGRAPHY

1. Bourneville: *Recueil de Memoires, Notes et Observations sur l'Idiotie. Paris. Progres Medical, 1891.*
2. Howe, S. G.: Report of Commissioners to inquire into the conditions of Idiots of the Commonwealth of Massachusetts. Boston. Senate Document No. 51. 1848.
3. Itard: *Reports et Memoires sur le Sauvage de l'Aveyron. Ed. par Bourneville. Progres Medical. 1894.*
4. Seguin, Ed.: *Traitement Moral, Hygiene et Education des Idiots. Paris.* J. B. Bailliere. 1846.
5. Seguin, Ed.: Idiocy. New York. Wm. Wood & Co. 1866.
6. Tuke, D. Hack.: Dict. of Psychological Medicine. Philad. P. Blakiston, Son & Co. 1892.
7. Bonaterre: *Notice Historique sur le Sauvage de l'Aveyron. Paris. 1799.*
8. Proceedings Assoc. Med. Officers of American Institutions for Idiotic and Feeble-Minded Persons. 1876–1886.
9. Condillac: *Oeuvres Complete. Paris, 1821.* T. 111, p. 233.
10. Proceedings Ass'n Med. Officers of Amer. Inst. for Idiotic and Feeble-Minded Persons. 1887–1895.
11. Journal of Psycho-Asthenics. Vol. I—XXII, 1896—1917. Faribault, Minn.
12. Proceedings Amer. Ass'n for Study of the Feeble-Minded. 1918–28.

THE PRIVATE SCHOOL — ITS CONTRIBUTIONS TO THE PROBLEM OF THE MENTAL DEFECTIVE

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The contributions which the private school has made to the foundation principles underlying the care, training and treatment of the mental defective have been overshadowed in recent years by the rapidly changing policies of the State and the individual communities.

Although Itard, Ferret and Voisin were temporarily interested in training problems, it remained for Dr. E. Seguin, in the year 1832, to establish the first private school for the feeble-minded in the *Hospice des Incurables* in Paris. Chiefly as the result of this experiment, the work spread to other portions of the world as evidenced by the work of Gegenbuhl in Switzerland, Saegert in Germany, Connolly and Reed in England, and Dr. H. B. Wilbur in America. Starting at a time when there was general public distrust and doubt as to the value of such efforts, too much credit cannot be given to their pioneer achievements.

In the beginning, the private school was an outgrowth of an individual desire to study in an intimate way the psychological and medical reactions to treatment, both physical and mental. As information was obtained from this study, attempts were made to apply such knowledge to the practical problems of everyday life. It is interesting to note in passing that the organization of the first private school in the United States was founded upon the family plan, in which the pupils spent their hours of recreation and training under the direction and supervision of some immediate member of the family. This fundamental principle is still the foundation stone of all private schools. With few exceptions, the establishing of such schools was born out of a love for unfortunate children by a self-sacrificing group who placed service to the mentally retarded above personal gain. With the establishment of these fundamental principles, as well as recognition by the community as manifested by the development of State schools, the problem of the private school changed to a greater individualization of a select group whom they felt could be most benefited by the home care and the psychological training of the special senses, the functions and the muscular system. This fundamental principle still remains an integral part of our modern systems of training. With the introduction of mental tests and the era of intensive intellectual development, the trend of the private school was to over-emphasize this aspect to the exclusion of the fact that we are dealing with a person as well as that person's family. With the introduction of endocrine treatment, a new field was opened up for the careful observation and study of the physical changes as related to the emotional and intellectual reactions of the individual. It is true that in many cases enthusiastic treatment was not tempered with intelligent scientific observations but the private school offered the means of providing a field for intensive study of such correlations by the private physician. With the changing sociological structure in which the home is gradually giving away to apartment life, the private school offers a means of furnishing the home life which is so necessary to the proper development as well as happiness of those who by birth and disease have a limited future.

There is a growing trend in the administration of social conditions that suggests that whenever possible the individual family must be taught to shoulder the burdens of its own mental problems and thus lighten the community burden. No state, or even city, has been able to assume the financial burden of either institutional or community control. The private school stands ready to assist in this major readjustment. It serves as a home for the development of the intellectual, emotional and cultural habits that will tend to make the retarded defective a more valuable citizen without such training being a drain upon the economic resources of the community. This, in itself, enables those who are more properly community charges to be adequately cared for. On the other hand, sacrificing families assume obligations that are rightfully those of the State, and care must be taken to see that future benefits will justify the expenditure of time and money. There are instances without number where the family resources have been strained, too often broken, by intensive and expensive educational programs and medical surveys, where later we find this same child a candidate for the State school, and the family life, hopes and aspirations shattered, whereas a systematic consideration of the economic status and sociological situations would have guarded us against such difficulties.

The formulation of a well balanced program for the mental defective and for the defective family is of primary importance. In the State school we work toward the goal of making such physical, intellectual and personality adjustments as will best fit our mental defective to assume his rightful place in the community. In the private school, on the other hand, the family often desire, after the limitations of the individual have been fully recognized, that definite plans be made so that the individual will lead a sheltered life and not be forced out into a world of unfriendly and unequal competition. We do not do our duty unless we fully explain to the individual family the rights of the more normal members to share in meeting the future burdens that may be theirs.

More and more, thinking parents of the cultured class recognize and admit the deficiencies of their children. This has come about through better knowledge on the part of pediatricians, as well as the recognition that these defects often have an accidental background. In the private school the group, where the deficiencies are accidental rather than hereditary, is much larger than that of the State school so that the family inherently has the feeling that there is not the stigma associated with such admissions. Thus, the admission of such children in the preschool ages is the most recent contribution which the private school is able to make. Unfortunately, as yet, there is not sufficient interest in this problem. The private school with its home environment offers a means of intelligently overcoming many of the delayed habit mechanisms which are so extremely important in the life history of any individual. Too often, we find children of this age are so petted and spoiled that the mother is a mental and physical wreck through misguided attempts to make up to the child through physical means that which was lacking mentally. This delay is detrimental to all concerned and renders the child inadequate to adjust himself to other surroundings. In this formative period, muscle re-education and orthopedic correction can be given as well as medicinal and glandular therapy, when indicated, in a way that is not possible in a State school with its limited personnel. Should it later be necessary to transfer such patients to a State school, we have rendered a distinct service to the individual in that physically and mentally he is better able to benefit by the limited training which is possible with limited resources. It is at this point that we should carefully readjust our program in the event that the family resources do not permit a further continuation in the private school. By this time, the mental viewpoints of the family should be such that we can, without fear of misinterpretation, frankly render a decision free from emotion and still one that is based upon adequate observation.

As the child enters the private school we should emphasize the fact that placement is with the idea of developing latent possibilities, rather than a means of merely shifting burdens to some one else. We are fortunate in being able to choose the individuals who will gain most by this character and habit training, for we do not have to accept everyone who comes. The private school is not limited to any specific program and thus we can develop the individuality of the child in a way that will best meet the future demands of our program. In the State school too often we are face to face with the need of making our individual into a self-supporting member of society. Thus, our school is in itself a research laboratory, the contributions of which will be limited only by the resourcefulness and scientific ability of the individual in charge. In the past we have forgotten that Dr. Seguin, with much more limited means at his command, accomplished more than many well established laboratories of today.

In view of the fact that the private school's advantage over the State school lies in the individualization of the individual, we must choose with care the personnel of such a school. Experience in the past has shown that while much can be accomplished in a purely educational way by those without medical training, still a well regulated program cannot be undertaken without intensive medical supervision. As a psychiatric approach to the family as well as the individual is most important, neuropsychiatric training is an essential need for those in charge of such a school. Teachers and attendants must have infinite patience as well as an interest in the hourly welfare of their charges, for in the private school the life is so intimate that one is never freed of responsibility. As a recompense for this additional responsibility, the majority of parents feel indebted for such service and the personal relationship thus established brings about an understanding that cannot be accomplished in any other way. This understanding is a major contribution of the private school.

The location of the private school should be conveniently situated near a larger center for the convenience of the patrons, but the opportunity furnished by life in the country as an accessory means of assisting in the physical and mental development is of primary importance. The daily lessons of the garden, farm, etc., are just as important as those of the classroom. Utilization of the patient into the daily activities of the home are of practical importance.

The character of the school will depend much upon the past experiences and interest of the individual in charge. Experience has shown that when we divorce the home aspect from the school activities, we lose that which is the most valuable. To many, and rightly of primary importance, should come the happiness of the individual. No private school can adequately serve the public if either the patient or the family is dissatisfied. This does not signify that it is necessary for us to relax our disciplinary measures so far as the patient is concerned, or to bow down to family whose wishes are unjust and unreasonable. In the private school there is or should be sufficient flexibility of program that we can carry out the wishes of the parents until they have sufficient confidence in our opinions to warrant our making suggestions as to the proper changes. Those who are accustomed to dealing with the public as represented by the charity case are often prone to be too hasty in breaking the news of the degree of mental retardation, for it is a decided shock to the average person to find that he is the proud father of an imbecile rather than a potential college student. The art of having parents come to this realization slowly is rapidly becoming a lost art. This does not justify us into deceiving a family into the vain hope that we can accomplish something that a careful I. Q. will show to be impossible. The success of our initial contact will often determine the success of our future program. There are two types of school at present, each of which has a definite niche.

The first type of school is primarily the rich man's school. Here the equipment and associations will provide a beautiful, cultured home with all the luxuries that it is possible to give, in keeping with the home life of the parents. In some cases a single child has made up such an establishment. There is a grave question whether the average mentally retarded child is as happy as he would be in the average State school, for he does not have sufficient understanding to appreciate what is being done for him and he often lacks the congenial associations that he might have in the latter place. In the borderline groups, without doubt, such children respond to the additional care and training which such associations bring about. When we accept children in such a private school from families of limited means, are we not doing an injustice both to the parent and to the child? Experience in the past has proven that there are few families who, over a period of twenty-five years, can afford an expensive type of treatment. The additional intellectual gain through intensive treatment and care is often lost when sickness or misfortune overtakes the family, and they are later forced to fall back upon the resources of the State. The child too often is educated to a type of life that makes adjustment both at home or in the institution additionally difficult.

Were all the State schools run on the same high plane that some of the better known schools are, there would not be the indecision of the general public in sending their child away from home. As long as political influences abound in our State schools there will be a crying need for the private school that will furnish a home and school, not upon the scale referred to in the previous paragraph but in keeping with the resources of the average family of today. There is no reason why the same careful medical attention cannot be rendered, particularly if a physician is in charge of the school. It is true that the school work cannot be as intensive, but an interested woman, whose soul is in her work, can often accomplish as much as many of those who are better trained but lack this feature of their daily lives. Much of the daily training of the mental defective is through association and habit mechanisms, and these do not always require expensive equipment and surroundings. The fact that the child has to take part in the daily activities of the household, such as washing dishes, making beds, etc., will be a help in practical application at home rather than a handicap, whereas, in the other type of school, there is someone else to do it. Experience of many years has shown that the mental defectives have simple wants and that their happiness often is linked with some very trivial factor in their daily life, and too often we do not give them a chance to find it themselves through forcing too much supervised play, etc., into their daily program. An atmosphere of loyalty, culture of good moral principles and sympathetic understanding of the individual emotional problems is not always an expensive luxury, for these are all principles that exist in understanding men and women and cannot be bought with money alone. Too often there is a feeling on the part of misinformed parents that unless John and Mary are given the limit of educational advantages they have not fulfilled their obligations. As a result, the normal members of the family are denied additional advantages which, if they only had been able to have, would have enabled them to be in a better position to help John or Mary.

With the changing social conditions of the community and the breaking up of the normal home ties, we see more evidence of the fact that the individual members, after the death of a father or mother, are unwilling to accept the burden of caring for a defective brother or sister within their own home. There are two ways in which the private school can render a service to the community, first — the intimate family contacts should permit of the education of all of the members of a family as to the need of a definite program for the future care of the defective, and the relative part which each might be expected to assume in the future. In this way the critical periods in the family life are adequately planned for and an ill-advised emergency commitment can often be prevented. The private school is face to face with the problem of how long should a child remain under its jurisdiction. The majority of private families do not desire to have their child return to the community as would become a part of a State program, so that it behooves all concerned to make adequate provision for care for the future. Secondly — a direct service to the community is rendered when the educated family make provisions for the establishment of a trust fund that will adequately care for the child in the event that death or other misfortune overtakes the family. The private school has initiated this movement and we deem it an extremely wise one. Preferably such a trust fund should be administered by outside agencies so created by law for the care of such funds.

To Dr. Walter E. Fernald the private institutions owe much, not only in the way of inspiration but as one whose counsel was always available. He took a deep personal interest in the trials and tribulations that attended the opening of such schools and did much to lighten their anxieties when the periods of depression and doubt came. He functioned as a stabilizer and prevented many from being carried away by a too enthusiastic program that had not been adequately proven to be wise.

Dr. W. H. C. Smith sponsored his application for admission to the American Association for the Study of the Feeble-Minded and, as Dr. Smith's son, I have been especially favored by Dr. Fernald's kindness and interest as a result of this friendship. He always expressed the idea to me that the private school should be an integral part of the organized forces working to better the conditions of the mental defectives. He felt that the private school offered the means for individualizing the care and training of suitable cases in such a way that we could correlate not only the emotional and intellectual factors but also the medical background and indicated medical treatment. He was quick to point out the defects of any program that did not consider the individual, the family and their relationship to society. He expressed the desire that we should look upon the private school as not being in competition but as an adjunct to the State and community program. He felt that much could be learned on the part of the larger schools and institutions from the personal contribution of the private school as to the results of individual study, but he likewise urged that the private school should incorporate the lessons learned through group adjustment. He, at all times, stressed the need of intensive medical, psychiatric and psychological study.

In conclusion, the contributions of the private school are: First — It serves to educate the individual family to the necessity of shouldering their own mental burdens and thereby lightening the economic drain upon the community.

Second — It emphasizes the needs and the accomplishments of individualized training.

Third — It offers a home environment which is best adapted to the happiness, the physical, moral and intellectual welfare of the individual.

EXAMINATION OF RETARDED CHILDREN IN THE PUBLIC SCHOOLS

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The influence of Dr. Walter E. Fernald upon the organization and establishment of State-wide school clinics for the examination of mentally retarded school children is widely recognized, but perhaps only those who were intimately associated with him in this work realize the immense amount of thought and planning this work entailed.

Dr. Fernald was appointed Superintendent of the Massachusetts School for the Feeble-Minded in 1887. Soon after this, parents and friends began to bring their problems to him for diagnosis and advice. Early in his career he recognized the importance of extending the work with the feeble-minded into the community. Up to 1914, 3,000 cases had been presented for diagnosis, prognosis and advice as to treatment and care. In spite of the extremely busy life he was leading in constructing a new institution, organizing methods for the care and training of the patients, at times acting as steward, treasurer and superintendent, and of keeping in personal touch with the most minute details pertaining to this work, he always found time to carry on this extra-institutional work.

In 1891, the out-patient work at the institution had grown to such proportions that it became necessary to set aside one day each week for the purpose of examining and giving advice to any outside of the institution who were in need of this service. This was designated as Out-Patient Day.

The examination and diagnosis of patients in the early days was not a simple matter. He had none of the present-day helps in diagnosis. There was no concept of mental age nor intelligence quotient nor could the help of trained assistants such as psychometric examiners, trained social workers, teachers, etc., be obtained. Up to 1911, when the Simon-Binet tests were introduced by Dr. Goddard, no formal mental tests were available and it was necessary for Dr. Fernald to formulate mental and school tests of his own and to rely upon his own judgment and experience with the mentally defective for diagnosis. About 1913, he evolved the "Ten Fields of Inquiry" which are used very extensively at this time as a syllabus for examining the mentally defective in school and other clinics in this and other States. He was skilled in pedagogy, having taught school in his early youth, and this knowledge and experience was of great help to him. In 1914 he wrote an article in the *American Journal of Insanity* on "Diagnosis of the Higher Grades of Mental Defect" which set forth his ideas. With his usual broadness of vision he early realized that mental tests alone were not sufficient for making a diagnosis and giving advice.

The graded school tests, now a part of the "Ten Fields of Inquiry," required a great amount of work and thought and Dr. Fernald, in collaboration with the principal teacher, spent much time upon this. In examining patients he found that the history of school progress and the actual school achievement did not coincide. Many children were promoted by height and weight instead of actual school progress. Although there were many graded school tests in different subjects, they were all too elaborate and lengthy to be usable in a school clinic, so he conceived making a school test which included graded reading, writing, arithmetic, spelling, geography and language, which could be marked plus and minus much like the mental tests. After this he conceived the idea of a correlation chart in order that the correlation of mental age, intelligence quotient and school acquirements could be graphically shown in a simple way and could be made available for the use of teachers, judges, social workers, etc., without going into details of examination.

It was one of his principles of organization that a thing only one person knew or could do was of no lasting value. He spent much of his life putting things on a permanent basis and making them available for the use of other people. The value of his contributions to rational methods of diagnosis of mental defect is immeasurable, and without these methods the successful establishment of Public School Clinics would have been difficult.

The out-patient clinics at the institution proved very helpful and were used by societies, state and city departments, courts, individuals and schools, and yet he felt that this work could be broadened. Early he began to talk about mental clinics in connection with public schools. In a paper read before the National Conference of Charities and Corrections in Baltimore in 1915 he said:

"Mental clinics, now in successful operation in almost every large city, furnish expert advice for many of the pressing problems of the public schools, the courts and the community. They should be increased in number and so extended as to be available for the entire population of the State. Out-patient mental clinics should be a part of the work of every institution for the feeble-minded. The expert clinicians and psychologists of those institutions, already in the service of the State, should be utilized in the organization and conduct of these clinics in different parts of the State."

When he was approached by the school authorities of Worcester and asked to hold clinics in connection with the public school system, he at once agreed to do this. The first clinic was held at Worcester, Massachusetts, in January, 1915. Soon the school authorities of other cities became interested and a second school clinic was started in Fall River in February, 1915; a third in Haverhill in September, 1915; a fourth in New Bedford in January, 1916; a fifth in Newton in May, 1916. These first public school clinics were held once a month. The superintendents of the Worcester State Hospital and of the Taunton State Hospital co-operated in the management of the clinics at Worcester and New Bedford. They sent members of their staffs who gave able assistance.

In addition to the regular monthly school clinics, several were held by the school clinic staff — at Taunton, 38 children in special classes; at Braley Station, a group of 41 children thought to be mentally defective; a group of 15 children at Hyannis, and another group of 15 candidates for special class at Falmouth, and 36 retarded school children at Revere. The total number of children examined in School Clinics up to 1921 was 1,297.

In writing of the economic value of this work in 1919, he said, "It costs over $1,000 to house a patient in the institution and over $300 a year to feed him. Thus our out-patient clinics save the State thousands of dollars a year."

The first school clinics were experimental. It had been predicted that much opposition would be encountered and that people would object to having their children singled out in this way. Due to Dr. Fernald's diplomacy, wise management and education of the public, this fear was proved to be without foundation. It was the experience of the members of the staff working under Dr. Fernald that the parents were glad to have advice and welcomed the examination when it was given in a sympathetic way.

The humanitarian side was always uppermost in his mind and he was constantly impressing this upon the minds of the examiners. He said in one of his monographs, "The usefulness of the clinics depends largely upon the tact and sympathy of the examiners towards the pupil and his parents and the school authorities. A mistake in diagnosis would be a tragedy."

In his paper on the "Inauguration of Public School Mental Clinics," he said, "These clinics were made constructive from the start, the purpose of the examination being not to discredit the backward child in any way but rather to find his present capacity for training, his probable rate of progress, his personal handicaps or special abilities and the like. In other words, this examination catalogues his possibilities as well as his limitations and has for its main purpose the idea of improving the child's condition as much as possible."

The demand for clinics in connection with the public schools steadily grew, but he felt more could not be undertaken until a larger organization for handling them could be planned and the school clinics made to cover the entire State.

In his annual report in 1919, he expressed his opinion of the value of school clinics as follows:

"Several other cities have made requests for similar clinics. At these clinics during the past three years we have given advice concerning a larger number of patients than are now present in the School. In other words, we are helping to care for as many patients in their own homes as are being supported by the State in the School itself. Many patients are thus safely kept at home who would otherwise be State charges."

He had always felt a great interest in the establishment of Special Classes and he felt that the Public School Clinics could be of great assistance in this work.

In November, 1919, he had outlined a comprehensive statewide program and in his monograph on a "State Program for the Mentally Defective," read at the Children's Bureau at Washington in 1919, he said:

"To sum up, the program now possible includes the mental examination of backward school children; the mental clinic; the traveling clinic; the special class; directed training of individual defectives in country schools; instruction of parents of defective children; after-care of special-class pupils; special training of teachers in normal schools; census and registration of the feeble-minded; extra-institutional supervision of all uncared for defectives in the community; selection of the defectives who need segregation for institutional care; increased institutional facilities; parole for suitable institutionally trained adult defectives; permanent segregation for those who need segregation; mental examination of persons accused of crime and of all inmates of penal institutions; and long-continued segregation of defective delinquents in special institutions."

Previous to the passing of the laws in 1919 relative to the examination of children three or more years retarded in the public schools, he had in a prophetic sense outlined the way in which the work could be carried on. He had by conferences, lectures and publications prepared the way for this legislation, and the successful carrying out of this program has been largely due to his indefatigable labors.

He was much impressed with the need for an official census of the feeble-minded in the State — "Those only to be registered who had been scientifically diagnosed, such register to be highly confidential and accessible to properly accredited persons." He felt that such a census of the feeble-minded would make State supervision ultimately possible.

In a paper read before the Massachusetts Society for Mental Hygiene he said:

"Our compulsory school laws now bring every child to official notice. The school census alone, including as it does every child in the community whether he goes to school or not, would, in a few years, reveal and record the existence of nearly every feeble-minded person. Such registration would be merely analogous to the required notification and record of cases of infectious and contagious disease. This co-ordination of existing records would be available for social workers, school authorities, and other agencies and would be of enormous service in the solution of the individual problems which the feeble-minded constantly present."

In July, 1919, the Massachusetts Legislature passed laws:

First: Relative to the establishment of free school clinics by the Department of Mental Diseases. A registry of the feeble-minded was to be established and maintained by the Department of Mental Diseases.

Second: To determine the number of school children three or more years retarded in mental development, and that the school committee should establish special classes in each city and town where there were ten or more children three or more years retarded.

The law provided that the school clinic should be under the direction of physicians from the State schools for the feeble-minded, or other physicians skilled in the care and treatment of the feeble-minded. It was seen very early that the schools for the feeble-minded could not possibly cover the ground and, at the request of the Department of Mental Diseases, a conference was called by Dr. Fernald in November, 1920, and was held at the Massachusetts School for the Feeble-Minded, now the Walter E. Fernald State School. One or more physicians were delegated from each of the fourteen mental hospitals. The object of the conference was to train these physicians in the diagnosis and recognition of feeble-minded and backward children of all ages and grades of mental defect in order to obtain uniformity of method in diagnosis and records.

These psychiatrists spent an entire week in all-day sessions. There were many lectures by Dr. Fernald and he gave demonstrations of typical cases of mental defect. Each psychiatrist was given an opportunity to examine many individual cases. He held these conferences practically every year until his death.

In addition to the school clinics, which had been held by the Massachusetts School for the Feeble-Minded and the Wrentham State School since 1915, the Department of Mental Diseases and the State Department of Education, under the advice and guidance of Dr. Fernald, in March, 1921, organized clinics throughout the State. The State was divided into fourteen districts, each district to be under the direction of a psychiatrist from a State institution. Each travelling clinic unit consisted of the psychiatrist, social worker, psychologist, and a clerk, the school department furnishing a teacher to give the school tests and also a school nurse or other socially-minded person to furnish the histories of the patients.

The work was practically carried on as laid down by Dr. Fernald in the Waverley clinics for many years. He was unsparing in his efforts to aid in every way in the organization of the travelling clinics and in the training of the various workers in the clinic. Teachers who were to give the school tests were sent to Waverley from all over the State to get instructions as to the technique in that field. Social workers and school nurses obtained instructions in the same way as to the methods of history taking.

He followed the work of the first school clinics very closely. He personally went over the records of each child examined in the clinic. He worked out a very exact technique for conducting the clinics. The personnel, the now famous ten-point syllabus which had been adopted by the Department of Mental Diseases, the correlation chart, the school test, suggestions as to advice, the keeping and reporting of the records, etc., had all been formulated by him. In this way this work was co-ordinated and made uniform.

Up to the time of his death he continued to give advice and guidance to the workers all over the State. He presided and spoke to conferences of these workers. He visited the clinics and made every effort to interest school superintendents, school committees and other officials and, in every possible way, worked to create a state-wide interest in the work of the school clinics.

In 1925, Dr. Harvey Watkins of the Department of Mental Diseases made a report in which he says, "The great success of these clinics is evinced by the fact that 121 cities and towns in the Commonwealth have requested such examinations, and such clinics have been held in 116 of these cities and towns."

A later report from Dr. Neil A. Dayton, Director, Division of Mental Deficiency, says that the number of children examined by all travelling clinics from 1921 to 1928 is approximately 38,000. He states that no clinics have been discontinued and all are active at the present time.

The Waverley travelling clinic alone has examined 12,000 children from 1921 to 1928, and forty-two cities and towns in Massachusetts have been visited by this clinic.

In a paper read before the American Association for the Study of the Feeble-Minded at Washington, D. C., in 1924, Dr. George M. Kline, Commissioner of the Department of Mental Diseases of Massachusetts, well expressed the indebtedness of the State to Dr. Fernald for his efforts for this legislation and carrying out of the travelling clinic and for eventually securing a common-sense State program for the feeble-minded.

Dr. Kline says: "The Department of Mental Diseases has been and is exceedingly fortunate in having in the State service Dr. Walter E. Fernald. It is a pleasure to acknowledge at this time the Department's indebtedness to him for advice and guidance in all matters relating to the problems of the feeble-minded. Whatever accomplishments Massachusetts has made in this field may be largely credited to him."

His interest in this work never flagged and it is significant that the last week of his life was spent in giving a course of lectures and demonstrations to physicians from the State hospitals to prepare these psychiatrists to conduct the school clinics which were assigned to them. He had practically finished this training class when he was stricken with his last illness. It seemed fitting that his last day at his post was spent in demonstrating to this fine group of psychiatrists, both men and women, an unusually large Thursday out-patient clinic. Nor did he neglect on that day to interview the mothers and other anxious relatives to whom he gave the usual comfort and help, as well as advice as to the child's needs. The mothers and others who talked with him for only a few moments, when they heard of his death, felt that they had lost a friend.

Strangely enough, the extensive program above outlined as far back as 1915, has been practically carried out in each detail in this State, and especially in the organization of the travelling school clinics the results have been most successful.

FERNALD'S INFLUENCE ON THE SPECIAL CLASS MOVEMENT

By Miss Frances E. Cheney,
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OUTLINE

Part I

1. Education activities at Waverley
2. First contacts with public school problem of retardation
3. Personal service in establishment of first two special classes in United States
4. Theories
5. Practical suggestions
    a. Selection of pupils
    b. Qualifications of teachers
    c. Housing of classes
    d. Rural problem
    e. Teaching
6. Mental tests and diagnosis
7. Social aspects
8. Legislation

Part II

9. Personal service to teachers and school superintendents
10. Personal service in education of teachers
    a. Salem Normal School
    b. Harvard Summer School
11. Influence in American Association for the Study of the Feeble-Minded
12. Influence in National Conferences
    a. National Education Association
    b. National Conference of Charities and Corrections
13. Influence in State conferences
14. Influence in local organizations
    a. In Massachusetts
    b. Outside of Massachusetts
15. Influence in Canada and Nova Scotia
16. Influence of publications
17. Conclusion

Part I

FERNALD'S INFLUENCE ON THE SPECIAL CLASS MOVEMENT

In reviewing the activities of Walter E. Fernald during the first seven years of his superintendency of the Massachusetts School for the Feeble-Minded, and in reading his paper written in 1894, entitled, "Some of the Methods Employed in the Care and Training of Feeble-Minded Children of the Lower Grades," one is impressed with the fact that however great the man was as an organizer and administrator in those years of expansion of the care of these unfortunates, he was *par excellence* an educator. His paper reveals these facts: *First*, that he has accepted the principle formulated by Samuel Gridley Howe, founder of the School, that "the school for the feeble-minded is a link in the chain of common schools, the last indeed, but still a necessary link in order to embrace all the children in the State"; *second*, that faced with the problem of caring for increased numbers of "relatively young children of the lower grade," untrained and well-nigh unmanageable, he has determined to solve this problem by means of education.

He proceeded at once to apply and adapt the principles of sense training and the development of motor-coördination devised and used by Edouard Seguin, pioneer educator of the feeble-minded. Thus he raised the level of behaviour and intelligent activity of this particular group. He closes the paper with the statement: "Indeed, books, slates and the conventional curriculum of the schoolroom are not for these low-grade children. Yet all of this training is education in the truest sense." The methods which he developed are still in use and have become models throughout this land. He shows at this time that he is conversant with the "new education," as he calls it, and understands the educational needs of the normal child from infancy on. Ample proof of this is seen in his development of the graded academic departments of the school at Waverley, with emphasis on object teaching, physical training, manual and industrial activity.

The knowledge of his skill as an educator had spread across the continent to California where Will S. Monroe, superintendent of schools in Pasadena, had made a psychological study of 10,000 retarded public school children. Monroe writes that while making this study a "medical friend" suggested that he might "get help from Fernald." He adds, "I opened correspondence with Dr. Fernald and found his suggestions of a very practical nature. That was before the days of mental tests and the large body of literature that we now have on the psychology of mental deficiency — later (1896) when I took charge of the department of psychology in the State Normal School at Westfield, Massachusetts, and continued my researches in this line, I frequently visited Dr. Fernald at Waverley and again found his large knowledge of the entire field most illuminating. I owe to him a very large debt of gratitude, and I am certain that he placed hundreds of others under the same obligation."

As a result of his research Monroe published a paper in 1894 entitled, "Feeble-Minded Children in the Public Schools," making a strong plea for the segregation of these children in public school special classes.

In the following year, 1895, in his Annual Report to the trustees of the School at Waverley, Fernald alludes to this paper and shows that he has given the matter serious thought for he tells of the growth of the movement in Germany in 1881, later in Sweden, Norway, and Denmark, and the beginnings in England, in London in 1892. He closes thus: "It is a question whether it would not be practicable in some of the larger cities of this State to establish similar classes as a part of the public school system, where the 'mentally exceptional' children could easily receive the special instruction needed at the age when such training is most beneficial without going away from home. The teachers in the lower grades of our public schools can testify to the necessity of such provision."

In 1896 the opportunity came to him to be of personal service in the establishment of the first public school special class for mentally deficient children in the United States. This was in Providence, Rhode Island, where the school authorities had decided to remove from their three so-called disciplinary schools (organized in 1893) certain pupils whose educational needs were not being met on account of obvious mental defect. In a short history of the special class movement in Providence written in 1899 by Rhoda A. Esten, supervisor of special schools, we find: "I cannot close this report without expressing my thanks to Dr. Walter E. Fernald to whom I am greatly indebted for help, inspiration, and valuable opportunities for observation." The present supervisor, Mary C. Greene writes, "When I came into the work in 1918, Dr. Fernald gave me valuable assistance. His advice was sound and I feel that his spirit pervades all my work in special education."

In 1897, Fernald addressed the New England Association of School Superintendents in Boston on the subject, "Feeble-Minded Children in the Public Schools." He said, "Whenever possible these mentally dull children should be taken out of the school and placed in special classes with experienced teachers, under intelligent medical supervision." He described the grades of mental deficiency from idiocy to the backward child and outlined the special training applicable to each grade.

This paper produced a profound impression upon progressive superintendents of schools, among whom was Thomas M. Balliet, of Springfield, Massachusetts.

Dr. Balliet, who recently retired as Dean of the School of Pedagogy of New York University, says of the paper: "It was a very influential factor in the establishment of these classes. His own work at Waverley, the methods he developed, had much to do with the movement. Superintendents and teachers visited his classes and went away feeling that the project was a practical one." Accordingly in May, 1898, the first special class in Massachusetts was organized in Springfield.

From time to time Fernald formulated his reasons for the establishment of such classes and gave constructive suggestions as to organization, equipment, curriculum, the training of teachers, and kindred matters. It was his interest in the welfare of the individual child which led him to make the following statements in defense of the maintenance of special classes: "The first and most important reason is that every American child has the right to be educated according to his need and capacity. We have no right to do less for the child of 50 or 60 or 70 per cent intelligence than we do for his brother with 100 per cent intelligence." He believed that the retarded children "should be isolated from the ordinary school" in order that "the normal children should not be annoyed or hindered by them." In turn, he considered the benefits accruing to the mentally deficient group: "The pupils would be put under special training much earlier — when more can be accomplished *for* and *by* them. Under present conditions many defective children are entirely deprived of opportunity for education, — unless they are properly cared for and influenced they will retrograde, fall into evil ways and become willing victims of the vicious." He describes graphically the fate of neglected young children whom he had seen, "simple-minded, trusting, affectionate, anxious to please," who later developed "an entirely changed view of life, a change brought about by misunderstanding, by continued defeat, by the repeated depressing influence of failure which led the boy or girl to commit some anti-social or overt act in self-defense or in defiance of the world which had given such boy or girl nothing but rebuffs and disapproval."

From the point of view of the home, he said, "Parents with refined, comfortable, well-regulated homes would greatly prefer the special classes to an institutional school, especially when the child is young." He also speaks of certain children who are placed in the institution, as being deprived of "normal home life, the moral and social influence of the mother, and of wholesome relations with the community."

From the economic standpoint he states: "These special classes do not involve the expense of large sums of money for construction of buildings — the actual expense of such teaching is directly assessed upon the community receiving the benefit." He advocated "special laws or definite school regulations," for the formation and conduct of the classes.

As to the selection of pupils, during the period antedating the discovery and application of mental tests, he advised cooperation between the teacher and the school physician, diagnosis to be corroborated by "a medical expert familiar with all phases of mental defect," and that "imbecile and idiotic" children be excluded. He recommended that the teacher make written reports of each child, recording "personal history, attainments, deficiencies, habits, home conditions, etc."; that the school physician record physical, nervous and mental symptoms, and that immediate and special attention be given to the improvement of the physical condition of the children. Careful records of progress should be kept with re-examination at stated periods, "to ascertain whether any children had improved enough to re-enter the grade class."

Among the qualifications for teachers he notes that they should be "fond of children, sympathetic and kind, but firm and decisive. — The personality of the teacher is the all-important factor. They should begin the work young, as a rule," with a background of "some experience in primary work," and should have "a hopeful temperament, great patience, tact, and originality." He goes so far as to say that "*no* teacher is qualified for *primary work* unless she understands the signs and symptoms of mental defect, and has actually observed and studied groups of deficient children." — "Provision should be made in normal schools for the training of teachers of defective children."

When he visited special classes in England in 1901 he found teachers whom he describes as "superior, well equipped for their work, with enthusiasm and zeal and great personal interest in their pupils, keeping in touch with the homes of the children and trying to secure the cooperation of the parents."

In large cities he believed that "all of the special classes should be under the immediate direction and supervision of a supervisor who has no other duties. She should be thoroughly familiar with the recognition and education of retarded children."

In 1906, he deplored "the almost total absence of skilled and responsible supervision of the special classes in American cities" as a "great detriment and handicap."

For the housing of these classes he suggests that in large cities they may be "in a locality where children from two or three large primary schools may be collected at a central point," and that "as far as is consistent with the special care and training which they require" they should "associate with normal children of their own age on equal terms. If these backward children are to spend their lives in the community they should in childhood learn to observe the customs and requirements of that community." But — no matter whether classes were housed singly, in small groups, or in centers he insists that "no intimation of reproach of inferiority should be tolerated."

He recommends for "every moderate sized city a workshop school with lathes, looms, anvils, tools, and other appropriate working equipment," where "the rudiments of woodwork, metal work, textile work, etc.," may be taught. He suggests that the equipment in these schools might be "varied according to the leading industries in the various cities," though he believed that it was not necessary that the children should be "taught definite trades," the main object being, "to teach them how to work and to love to work." For older girls the instruction should include "ordinary domestic work, cooking, laundry, sewing, mending, etc."

In 1921, he reiterated his conviction of the need of "providing decent, red-blooded, occupational, pre-vocational training for feeble-minded boys and girls between 13 and 15 years of age," and added: "The success of the special classes will be measured by the relative ability of the trained pupils to maintain themselves independently in the community and to earn their own living."

He shows concern for the welfare of children in villages and remote rural districts who cannot be placed in special classes. He would have *all* normal-school graduates familiar with the limitations and needs of the retarded child. He suggests that the state furnish "small, compact packages of special school material" for the use of these children, "similar to the travelling library service." He commends a teacher's manual comparable to that compiled by Arnold Gesell of Connecticut. He hopes for the time "when every state board of education will have trained visiting teachers or special supervisors who will go from town to town supervising the education of sub-normal children" and will provide "extra compensation for rural teachers or for

HARVESTING APPLES
Templeton Colony

teachers in small towns who give special out-of-school instruction to their defective pupils."

As to the type of academic work which special class children need, he states, "Compared with the education of normal children it is a difference of degree and not of kind — the progress is slower, and the child cannot be carried so far." The need is for "modern graphic methods of instruction with large emphasis upon attractive, sensorial, and motor aids to the exercise and expression of attention, observation, perception, and judgment." The work should be "within the child's comprehension," and the teacher should bear in mind that "the best that a child can do is good enough."

He stressed the importance of motor training, to arouse "the feeble powers of voluntary attention, comprehension, and the weak power of volition through games and exercises, simple at first and gradually growing more complex."

Occupational work in great variety should be devised to train "the finely coördinated muscles of the fingers, hand, and forearm. — There is a very intimate relation between what a child knows or thinks, and what he can do with his hands."

He warns against over-emphasis on scholastic achievement. He writes, "Social, moral, and emotional discipline, and example, are quite as important for the defective child as strictly scholastic training," reminding teachers that "his adult conduct and behavior will be conditioned as much by the modification of his traits of disposition, personality, and character as by his intelligence."

Fernald was keenly appreciative of the value to all concerned with education of Goddard's contribution to the knowledge of the intellectual status of the feeble-minded, when by his research and study he adapted the Binet-Simon tests to American conditions. He saw the practical value of the concept of the mental age, its correlation with the school grade level and with the chronological age; also that this with the concept of the Intelligence Quotient, made possible a prediction as to the "adult scholastic level of a feeble-minded child, and the probable adult mental age of that child," and shed a new light on the "possibilities and limitations of his education."

He then devised a "Chronological, Mental and School Age Correlation Chart" for use in his records of individual children at Waverley. These charts are now available to special class teachers whose children are examined through the State Clinics. They picture in a graphic way the mental status of the child and provide a means of recording progress from year to year. He would remind teachers, however, that to diagnose, understand

and educate the feeble-minded is not a simple matter. The research work done at Waverley in 1914 using the Binet test in combination with other tests which he devised, the published result, "The Diagnosis of the Higher Grades of Mental Defect," followed by a further study in 1917, "Standardized Fields of Inquiry for Clinical Studies of Borderline Defectives," show his conviction of the complexity of the problem of mental diagnosis, "and did much to broaden the field which the special class served," to quote Dr. A. Warren Stearns.

That he considers intelligence as but one of many factors to be considered is shown by this statement: "An individual defective may be expressed or described only by an equation — his intelligence + his body, + his family, + his training, + his personality traits, + his morals, etc." The natural outcome of these convictions was the formulation of his well-known blanks entitled "The Ten Fields of Inquiry," used for some years in the out-patient clinic at Waverley, and since 1922 by the Massachusetts School Clinics in their examinations of children "three years or more retarded in mental development." In the light of the complexity of the whole problem, he states: "We can no longer say they all need this or that."

From the early days of special classes Fernald was concerned with their function as clearing houses to determine which children could with safety be kept in the community, and which needed either temporary training in the institution, or permament protection. He stressed the importance of social supervision, and for some years his conviction as to ultimate segregation was in accordance with the statement made in 1906: "Feeble-minded children may be tolerated in the community, but any plan for the treatment of this class should provide for the withdrawal from the community of the adults." The superintendents of other state institutions shared this conviction; one of them stated during a discussion of special classes: "It is our duty to point out the limitations of usefulness for such schools." This was soon after the discouraging report of the after-care committee in London at the end of fifteen years' experience. Of this report Fernald writes, "It has not been demonstrated that a large proportion of really feeble-minded children can be so educated and trained as to be able to support themselves by their own effort and wages; or that they become wholesome or desirable members of society."

In 1912, at a meeting of the National Conference of Charities and Correction, Alexander Johnson stated: "The righteous have sworn the segregation of the feeble-minded in 1925." This period was described later by Fernald as the "period of pessimism." At last the tide began to turn. That Fernald himself had been heartened as early as 1915 by the experience of a special class teacher, is shown by an extract from his paper, "What is Practicable in the Way of Prevention of Mental Defect," "The possibilities of extra-institutional supervision, early diagnosis, and long continued education of the parents and the community are well illustrated in the experience of a socially-minded teacher of a public school special class in Massachusetts. This teacher has taught this class for seventeen years, and some of the pupils in her first class are now over thirty years of age. In addition to her duties in the schoolroom, she frequently visits the homes of her pupils, and often confers with the neighbors, the policeman and the clergyman, as well as the parents. After the children have left her class, she has kept in touch with them and with their parents. She has made much use of mental clinics in ascertaining the exact mental status of her pupils. When her pupils or former pupils have needed something more than home care, she has already prepared the parents for the transfer to an institution. In all these years none of her female pupils have become mothers or are known to have been immoral, and none of her boys who have remained at home have yet become criminals or especially troublesome."

His own investigation made in 1916, "After-care Study of the Patients Discharged from Waverley for a Period of Twenty-five Years," showed that many of these patients "under favorable circumstances constituted no serious menace to the community."

From 1916 on, reports of studies of special class graduates made in New York, Boston, Cleveland, Cincinnati, and other cities were on the whole favorable. Gradually the conviction grew that certain trained defectives should be given opportunities for maintaining themselves in the community and that Fernald had clearly stated the function of the institution when he said, "Institutional care and training is the obvious remedy for the highly hereditary class of defectives, for the bad defectives, and for those defectives who are not properly trained and cared for by their parents." That the special class should participate in this work of selective segregation, he never failed to stress.

In 1923, Fernald was as insistent in regard to the need of social supervision of the special class child during school life as he had been in previous years. He said to the Harvard Teachers' Association, in his paper on "The Subnormal Child": "In the public school system to-day, the school nurse, the attendance officer, the visiting teacher, or the child's teacher, should be familiar with the subnormal child's entire life, not only in the schoolroom, but in the community and in the home. They must inform the parent of the child's possibilities and limitations, and warn of the dangers of the adolescent period. This continued social supervision by the school authorities up to the age of 16, when the child leaves school, almost assures that he will have safely passed the greatest dangers of his adolescence." And, in the following year, 1924, we find the renewed expression of the earlier belief that supervision should be continued during adult life, in the essay written for a volume entitled "Social Aspects of Mental Hygiene" (Yale University Press), published after his death. His subject was: "The Feeble-Minded in the Community." In his sub-topic, "Supervision of the Feeble-Minded," he pleads for systematic supervision in the community, with a responsible state officer in control; "a psychiatrist with special knowledge of mental deficiency and its many social expressions." He advises making use of "existing local public and private organizations and societies, or of properly qualified volunteers in each community" — under the direction of the state officer, "but all under the direction of the central authority."

The fruition of his interest and activity in the special class movement, covering a period of thirty years, was the legislation enacted in 1919, becoming operative in 1922, providing for the examination of school children three years or more retarded in mental development, and making obligatory the establishment of special classes in connection with the public schools throughout the state. This provision was but a part of the State program which he outlined as he saw the whole problem in its many phases.

It was characteristic of Fernald's open-mindedness and modesty that he should speak of the program thus: "It will be modified and developed as our knowledge and experience increase."

Part II

A discussion of Fernald's influence on the special class movement in Massachusetts would be incomplete if it failed to attempt to reveal, however inadequately, his whole-hearted, self-sacrificing, personal service to individual teachers and school superintendents who felt the inspiration of the moral force of his character and the challenge of his message.

The assistance given to the pioneer teachers was such that many felt that they owed him a debt of gratitude which could never be repaid save by efforts to render, to the children whom they were privileged to teach, the type of service which his own life exemplified; as one of them said, "His advice and the vision he had of our work inspire me to try in a humble way to carry on the work as he would want it done, and my memory of his unaffected, generous, helpful personality, leads me to want to be of every bit of service to these children, it matters not how little or simple that service may be." Special class teachers were always heartily welcome at Waverley. Fernald would, if possible, first show them the helpless idiots, then the training classes composed of children of imbecile grade, next the kindergarten group, and last the children of the graded school. This plan was in accordance with his theory, to quote one of his co-workers: "In order to work successfully with the higher grades one should understand the method of training the lower grades." One teacher remembers his placing in her hands, in 1898, Seguin's book, "Idiocy and Its Treatment by the Psychological Method," saying, "This is a classic. Read it." He allowed this teacher to study his personal notebook in which were outlined games and special exercises for the development of muscular co-ordination, also lessons in sense-training, together with suggestions for manual work, all of which were being used in the education of low-grade and middle-grade children. He frankly acknowledged that Seguin was the source of his inspiration for this type of education.

The late Edwin P. Seaver, superintendent of schools in Boston, wrote, in a letter to the Boston *Evening Transcript* of November 15, 1898, an account of the beginnings there to provide special classes. He quoted Fernald at length, and acknowledged the assistance he had given in securing a teacher for the first class which was to be formed in January, 1899. In 1902, when Seaver felt the need of further public support, Fernald spoke before a special meeting of members of the Massachusetts Civic League on the importance of the work, and again in 1903, when the late Dr. Walter Channing and Professor Will S. Monroe also spoke. At the close of this meeting a committee was appointed to confer with the Boston School Committee to assure the latter of the support of the League. About this time Fernald used his influence in securing the appointment of the late Dr. Arthur C. Jelly, alienist, as medical inspector of the classes, which position he held until 1926, giving mental as well as physical examinations to children who were candidates for special classes. Shortly before Dr. Jelly's death in 1929, he said: "At a medical meeting about two years ago I reported on special classes in Boston schools, and remember saying that they were a sort of *living monument* to Dr. Fernald's efficiency."

In 1912 Fernald was influential in persuading the Boston School Committee to form more classes, and to appoint a supervisor. Honorable Joseph Lee, then a member of the Committee, writes of this occasion: "I remember that his influence was potent in persuading the Committee to increase the number of classes from 8 to 75, that he appeared at several hearings before the Committee and impressed it in a decisive way. — He was one of the great educators of our time." This expansion of the work in Boston led Fernald to offer to give special assistance to the new teachers. He at once arranged to hold clinics for them at Waverley, and to give them opportunities to visit the various departments of the School. From 1912 to 1915 he lectured to them on the following topics: "The Value of Sense-training," "Problems of Special Class Teachers," and "The Social Aspects of our Problem." He accepted with some reluctance the compensation offered by the School Committee. He said, "I am never so happy as when I feel that I am of the slightest service to these classes." Appreciation of this service was voiced by the teachers: "I never cease to marvel at the amount of cheer, courage, refreshment, and invigoration that comes to one through listening to Dr. Fernald." — "He made me feel so much like cleaning house in my class room, mentally and spiritually." — "He made me wonder if I always knew what *good* a lesson was going to do a child."

In 1914, he expressed willingness to co-operate in a movement for an after-care officer for graduates of special classes, and in 1915 outlined specific recommendations to the School Committee. He again made clear, in 1917, the purpose of carrying out the plan, in a letter to Ada M. Fitts, supervisor of special classes: "I have long regarded this as an indispensable part of the special class program. — This supervision would enable us within a short time to distinguish those pupils who can be profitably trained in the public school classes, and those who ought to be sent to an institution, before the special class work can be profitably carried on. I am sure that one year's supervision of this sort would give information which would save a great deal of money in the administration of these classes. I shall, as always, be glad if I can be of the slightest service to you in this connection." Four months later a special class teacher was transferred to the new field as "Teacher Assigned to Follow-up Work." In 1919 he gave practical suggestions about data to be recorded on after-care blanks: "It would be better not to say that a boy is 'doing well,' or 'is improving,' but to say that 'he has stopped running around nights,' and that 'he now obeys his mother whenever she directs him'." The present incumbent of the position writes, "I could always turn to Dr. Fernald for advice, taking and sending many problem cases to the Thursday clinic (at Waverley). His wonderful way of telling intelligent parents the absolute truth was an inspiration each time I heard it.

He was as kindly and honest to ignorant parents." The Boston classes now number 129, and are maintaining a reputation of which the city may well be proud.

Honorable Payson Smith, Massachusetts Commissioner of Education, gives his estimate of the value of special classes, and of Fernald's contribution to their success: "Special classes in the public school system of Massachusetts are establishing desirable mental, physical, and moral habits in the lives of thousands of boys and girls who are retarded in mental development. These boys and girls are for the first time experiencing the satisfaction of successful achievement. Dr. Walter E. Fernald did more to make these classes a success than any other person. His untiring zeal and enthusiasm helped to awaken public interest and to bring about legislative action requiring such classes as a part of the public school system of Massachusetts."

Special class teachers in many sections of the State testify to the assistance given to them by Fernald. Limitations of space make it impossible to record all of the tributes. One writes, "My superintendent and I went to him many times for advice upon unusual cases. He always could help us and kept us feeling that the special class was about the most important part of the whole school system. Upon his advice I spent two summers at the institution, working as an attendant, and he always gave me the privilege of attending all lectures and clinics which would help me in any way." Many other teachers, including undergraduates from normal schools, were given this summer privilege. "We sometimes had from 15 to 20 in this group, and many of them went into special class work, while others became interested in the testing and diagnostic side of the work," writes Jennie C. Lowden of Toronto, who was associated with Fernald at Waverley from 1906 to 1917. Dr. Ransom A. Greene states that this door of opportunity is still open.

Fernald never refused requests to speak to groups of teachers if he could possibly arrange to do so. Worcester recalls his address before the primary section of the Worcester County Teachers' Association in 1911, on "The Special Class in the Public School." In 1915 he spoke to all the public school teachers of Lowell. A report of this talk notes that he "made clear to all, the problem of the retarded child and the opportunity which the special class offered to that child." His subject in June, 1922, at a meeting of the Waltham Teachers' Association, was "Intelligence Tests." These teachers were given a special invitation to visit Waverley on the following holiday, June 17. In the same year he addressed the Bristol County Teachers'

Association on "The Significance of Variations in the Intelligence of School Children." At this time he spoke of the retarded child as being "generally misunderstood and often very unfairly treated." He reminded teachers that "limitation in intelligence does not indicate limitation in character, personality, honesty, and other qualities which go far toward making up for limited intelligence," and closed by saying, "After all, the teacher's job is to help boys and girls to become honest, brave, and useful men and women."

He was ever ready to co-operate with teachers by taking into the institution, from the special classes, children in need of the protection, supervision, or training which the institution offered; those from families having a highly hereditary taint; those whose environment and home training was particularly unfavorable and inadequate; and those with markedly delinquent tendencies. In regard to this latter group, he had little patience with a special class policy which neglected placing children in the institution until after "they had been educated at home and on the streets, and had gained experience and facility in crime."

He welcomed opportunities to meet superintendents of schools. One superintendent writes of "a round-table conference of the Old Colony Superintendents' Club," "I recall very well the day spent with Dr. Fernald. Some 15 or 20 superintendents were present, and Dr. Fernald sat down and talked with us informally about special class work in general, and our problems in particular." Another writes, "'It was a delightful and instructive day." On two occasions he spoke before the Association of Massachusetts School Superintendents, in 1916 on the topic, "The Education and Care of Special Groups of Children," and in 1920 on "A State Program for the Education of Mentally Retarded Children." The latter talk was illustrated by large charts and graphs which he had prepared in order to show the classification of various grades of mental defect; the correlation of chronological, mental, and school age; also the prediction of the probable adult mental age and the final school grade, of a given child, based upon his intelligence quotient.

Statistics for the year 1929 show that 118 towns and cities in Massachusetts maintain special classes. In an attempt to secure concrete evidence of Fernald's influence among the superintendents of schools in these localities, a questionnaire was sent to each superintendent, to which *all* replied. Of these 116 gave definite information; 74, who had organized their classes prior to 1924, acknowledged that his influence had been felt either through lectures, or through personal contact; of the remaining 44, whose classes were established after 1924, 30 reported his influence. Many of these superintendents give instances of Fernald's personal assistance. New Bedford acknowledges his service: "Our new workshop classes are a direct result of his conferences with our assistant superintendent." Others write of taking children to Waverley for clinical examination, of sending teachers there for training, of certain teachers going to Fernald regularly for advice and counsel, of their school nurses taking children to him for his personal diagnosis, and of school physicians visiting the School. Some tell of the service rendered by the Waverley clinical staff which for some years came regularly to their community to examine retarded children (before 1921, when the state clinic was organized to do this work), while others pay tribute as follows: "Dr. Fernald was in personal consultation with us at the time our special class for mentally retarded children was established. At that time he talked to all our teachers on one occasion. He made an unforgettable impression on them all. The thing that won them most was not his great learning, but his great understanding heart. Everyone of the several visits he made here was not only helpful to me, but left a sort of benediction. Just to look at him did one's heart good. Yes, we who knew him remember him with gratitude, and no one anywhere mourned his death more genuinely than we." — "The value of Dr. Fernald's work will be increasingly evidenced as his ideas are put to practical test." — "It is my very earnest opinion that every person connected with school work in Massachusetts has been influenced by Dr. Fernald's work and teachings. We cannot escape that strong wholesome influence for many, many years, whether we wish to or not." — "He was comparable in my mind to Louis Pasteur, in his humanizing philosophy of curative action on the suffering mankind." — "His unfailing courtesy, his sane and constant optimism, and his rare faculty for helping in a most practical fashion are the three characteristics which impressed us all."

Arnold Gesell, Director of the Yale Psycho-Clinic, gives a discriminating estimate of Fernald: "It is my impression that Dr. Fernald had a very humanizing influence upon the special class movement. . . . He appreciated, better than others, the importance of individualizing the training and supervision of the mentally deficient. Much of the influence of Dr. Fernald was exerted through his superior personality which went beyond the limitations of over-academic generalizations in regard to the complicated problem of feeble-mindedness. We can still feel the moderating effect of his sane and humane outlook."

Provision in normal schools for the training of teachers for special classes was ever in the foreground of Fernald's thought.

He had given enthusiastic support to the opening of a model special class at the Salem State Normal School in 1917. This gave opportunity for a certain amount of observation for normal-school undergraduates. In 1921 an optional course in the education of retarded children was offered to seniors, with some practice teaching included. During the six years following, 102 students elected this course. These students visited Waverley annually. Concerning these occasions their instructor writes, "Dr. Fernald always found time to greet us personally, and to speak for a few moments upon any questions with which our students were wont to ply him. Generous with his literature, as well as with his time, he always sent us back with the latest pamphlets of which he had enough to distribute." The principal of the Salem State Normal School, J. Asbury Pitman, expresses gratitude for Fernald's cooperation: "His keen interest in our work brought him here on occasions when many another man would have excused himself upon the ground of extreme pressure of work, on physical inability to assume any additional burden. We are under lasting obligations to him for the many valuable services he rendered us in the work of teacher training, particularly in the matter of the preparation of teachers of retarded children."

Fernald went annually to normal schools in the State, upon request, to lecture to the undergraduates. The following expressions of appreciation of this service, from principals of these schools, are typical: "He came to us always with a message of sound pedagogy and broad-minded wisdom." — "His addresses were among the most interesting and most valuable that we have ever had." — "We found him so earnest and sincere that we were all captivated by him whenever he came." — "In my judgment, the name of Dr. Walter E. Fernald will go down in the history of education in Massachusetts and in America as that of one of our great educational leaders. Although he was essentially a specialist in his chosen field, his work was based upon broad fundamental principles which were applicable to the education of normal children as well as to the training of those of limited intelligence. His natural ability, his thorough preparation, his broad experience, and his enthusiastic professional spirit gave him the vision that made it possible for him to set new standards in the training of the feeble-minded, and for the development of a large proportion of them into self-respecting, responsible, self-supporting individuals."

An outstanding personal contribution to the actual training of teachers, and of far-reaching influence, was begun in 1915, and continued for nine summers. This was in connection with the six weeks course at the Harvard Summer School in the Psychology of Mentally Deficient Children," conducted in cooperation with Professor Walter F. Dearborn. The students went to Waverley each morning for two weeks, and while there were under Fernald's personal charge. The class met daily to hear him discuss the subject from many angles. Groups of children were brought in to illustrate the points made. The lectures were interspersed with visits to the training classes and the kindergarten, and to the schoolrooms where demonstration lessons were given to the children who were assembled for the purpose. The schoolhouse was filled with exhibits of materials used in teaching, and samples of work done by the children. After the lunch hour, the School library, noted for its rare collection of books and pamphlets, was thrown open for the use of the students. Professor Dearborn writes of the course, "Fernald's rare skill as a teacher, his broad human interests and wealth of experience, soon made this a much-sought course, and we shortly had to limit its enrolment. Students, chiefly special class teachers and supervisors, school psychologists, and those preparing for these positions came from all parts of the country and a few from foreign countries. Superintendents of schools, psychiatric social workers, and others from various walks of life also had occasional representation in the course." A teacher from Connecticut writes of her memories: "Dr. Fernald's personality and influence radiated from every part of the institution. Unconsciously it became a part of you and you carried it home." Others said, "Nothing that I have ever done seemed so worth while, helpful, and inspiring." — "His influence was dynamic, and his teaching most inspiring." — "At Waverley we were treated as welcome and important guests. Nothing could ever repay the continual courtesy, goodwill, and helpfulness extended to us so graciously by those who directed and assisted us in our work at Harvard and Waverley."

Although the major part of Fernald's influence on the special class movement, in terms of personal service to individuals, in the formation of public opinion, and later in the molding of legislation was of necessity within the confines of his own commonwealth, nevertheless his influence was markedly felt in diverse ways throughout many sections of the United States and in Canada. Through his connection with the association of superintendents of institutions for the feeble-minded his message was carried to nearly every state in the Union. The official organ of this Association, the "Journal of Psycho-Asthenics" was published quarterly. In the volume for 1897, under "Notes and Abstracts," reference is made to the first conference of auxiliary teachers in Germany, and again in 1899 to the second conference. From 1898 until 1918, Fernald served as an associate editor of the Journal. During the twenty years of Fernald's associate editorship, contributors to the Journal and to the annual meetings of the Association included among others doctors, educators, teachers and supervisors of special classes, many of whom were secured through his influence. In 1899, during a discussion of special classes, he said, "The establishment of special classes is going to modify the problem of teaching the feeble-minded." Three papers on the subject of special schools were given at the annual meeting of the Association in 1900, by residents of three different states: Mrs. Rhoda Esten of Rhode Island, Dr. Samuel J. Fort of Maryland, and Dr. Walter Channing of Massachusetts. At the close of Dr. Channing's paper, Fernald commented, "I heartily endorse this method of teaching these children." In the Journal for the year 1903, Fernald's article appeared: "Mentally Deficient Children in the Public Schools."

The papers relating to special classes, which have been uninterruptedly presented before the Association, and printed in its proceedings, often aroused misgivings, opposition, and serious discussion, but one notes a gradual change of attitude through the years, due largely to Fernald's sane and growing optimism, based not upon theory but upon observation and research.

At various times he was asked to speak at national conferences. In 1903, when the "Special Education" section of the National Education Association had for its topic "Shall the Scope of the Public School System be Broadened to Take in All Children Capable of an Education?" Fernald was asked to lead in the discussion of the mentally retarded child. He gave constructive suggestions concerning the type of instruction needed, and closed with a warning as to the possible fate of unprotected children who remained in the community after leaving school. His article on the same topic was published in the "Journal of Education" of July, 1903.

At the National Conference of Charities and Correction in 1904, he was chairman of the section on "Mental Defectives" and read a paper on the "Care of the Feeble-Minded," which included a plea for special classes. Lydia G. Chace of Providence also gave a history of the special class movement in her paper, "Public School Classes for Mental Defectives." At the meeting in 1907, he stated in discussion: "The public school is the place to study the beginnings of mental defect and moral delinquency." In 1915 when chairman of the committee on the "State Care of the Insane, Feeble-Minded, and Epileptic," he presented to the section on the "Prevention of Mental Defect" his notable paper: "What is Practicable in the Prevention of Mental Defect," in which he outlines the contribution which the special class may make in the field of prevention. A National Child Welfare Conference in 1919 was the occasion of his speaking in Washington, D. C., on "A State Program for the Care of the Mentally Defective."

Many invitations came to Fernald to speak before state as well as national conferences. On six different occasions, between 1908 and 1924, when he addressed the Massachusetts State Conference of Social Work, the subjects considered were for the most part, feeble-mindedness as related to juvenile delinquency, adolescence, or mental hygiene. In 1915 he attended the New York State Conference of Charities and spoke on "The Duty of the State Toward the Feeble-Minded"; in Iowa in 1919 he gave his "Outline of a State Program for the Care of the Mentally Defective"; in Wisconsin in 1920, "The Next Step in the Care of the Feeble-Minded"; in Indiana in 1921, at a Mental Health Conference, "Our Modern Conception of Feeble-Mindedness," and, in the same year, in Connecticut, the "State Program for the Care of the Mentally Defective."

It is impossible to give a complete record of the many occasions when he spoke, often extemporaneously, to local organizations throughout the state for the purpose of imparting knowledge and "creating public sentiment," because of his firm belief that in an adequate plan "the care of the feeble-minded will be largely decentralized and the initiative and responsibility largely shared by the local community, under highly special direction." The organizations to which he talked included, medical societies, men's clubs, women's clubs (local and state, religious and secular), mental hygiene and public health conferences, parent-teacher and social-welfare associations. His message was convincing — its influence cannot be measured.

He was often called upon to speak to similar organizations outside of the State. During the early days of special class provision he went to Pennsylvania to help with a local problem in Philadelphia, where a conference was called by the Public Education Association "to consider a more adequate system of caring for the backward children in our public schools." This was in 1906. The paper prepared by him was entitled: "The Importance of the Early Discovery and Training of Defectives in Special Public School Classes." (Copies of this paper have been widely distributed.) It was characteristic of Fernald that on the morning following, he was willing to attend a conference of district superintendents of schools, teachers, and public spirited citizens for the purpose of discussing the local problem in detail. One of the by-products of the conference was the appointment of an after-care committee. In 1923, he again went to Philadelphia to the "All-Philadelphia Conference on Social Work," to speak on the question, "What Shall We Do with the Feeble-Minded?"

Dr. Helen MacMurchy, now Chief of Division of Child Welfare in Canada, writes of Fernald's "advice, knowledge, and experience," as having been "invaluable" to her in her work as Inspector of Auxiliary Classes in Ontario, from 1914 to 1920. Her successor, S. B. Sinclair, tells of the present indirect influence of Fernald through Jennie C. Louden (formerly a member of the staff at Waverley) and since 1919 one of the faculty at the "Summer Training School for Teachers," in Toronto: "Through her able and enthusiastic assistance, our teachers have had an opportunity to gain a knowledge of the Seguin material and methods, and of the many commendable features of Dr. Fernald's work. A successful special class teacher in Ottawa says, "Any success we may have had in our work here is due to the splendid training which I received under Dr. Fernald's personal supervision, during the two months which I spent in his wonderful institution." It is also recorded that the first special class organized in Halifax, Nova Scotia, in 1916, was taught by a teacher who had been similarly trained at Waverley.

The publication of many of his papers in educational, medical, mental hygiene, and social welfare journals and also in pamphlet form, widened the scope of his influence. In his annual reports to the trustees of the School, beginning as early as 1895, he makes frequent allusions to special classes.

The points which Fernald enumerated, in 1923, present in concise form the logical steps which he believed should be taken for the adequate care of the individual defective:

> We must recognize his condition while he is a child.
> Protect him from evil influences.
> Train and educate him according to his capacity.
> Make him industrially efficient.
> Teach him to acquire correct habits of living.
> When he has reached adult life, continue to give him the friendly help and guidance he needs.

In his unceasing personal efforts to help in carrying out this program he exemplified in a way rarely seen the words of the Master, "He that is greatest among you shall be your servant."

COMMUNITY CARE OF FEEBLE-MINDED

By C. Stanley Raymond, M.D.,
*Assistant to Commissioner of Mental Diseases**

Dr. Walter E. Fernald's idea concerning community care underwent many changes during the twenty years which the writer was privileged to know him. The last paragraph in a pamphlet entitled "Feeble-mindedness," published by the National Committee for Mental Hygiene in 1924, describes a hopeful program for community care. This is his last published writing and the paragraph mentioned is copied to show how he was keeping up his custom of looking forward far into the future.

A Hopeful Program

"We are beginning to realize the vastness of the problem of feeble-mindedness. There are probably 60,000 mentally defective persons in Massachusetts alone. We now know that all feeble-minded persons cannot be permanently segregated in institutions. We believe that the vast majority will never need such provision, but will adjust themselves at home as they have always done in the past. They will be recognized during their school life by school and travelling clinics and will be given better training in special classes or in the regular classes. Much of the present scholastic training will be supplanted by industrial training. The schools are providing special social supervision and will do so much more in the future. The bad defective individuals and the neglected ones will be sent to institutions before they come to grief. After the school age, the State will provide extra-mural supervision for all neglected or badly behaved defectives. The price of liberty will be good behavior. Those who can live at home safely and usefully will be allowed to do so. Well-behaved institution patients will be released on permanent supervised parole. It will be a highly selective process."

How different is this viewpoint from that of 1904 when, addressing the National Conference of Charities and Correction, Dr. Fernald said in part, "A feeble-minded child is a foreign body in a family or a modern American community. It is a public duty to relieve these families of their unbearable burdens. It has been well said that under any conditions these defectives must always be supported by the public. It may be through the charity of neighbors and friends; it may be through the township overseer of the poor, or in the town poorhouse, or in the jail or reformatory, but the public always pays the bills. A very large proportion of feeble-minded persons, even the well-trained, high-grade cases, eventually become public charges in one way or another. No one familiar with the mental and physical limitations of this class believes that any plan of education can ever materially modify the fact. Feeble-minded children may be tolerated, but it is a great responsibility to inaugurate any plan on a large scale which does not withdraw the defective adult from the community. It does not seem probable that American public opinion will be satisfied with any substitute for some form of permament segregation of the great majority of this demoralizing class under government supervision and at State expense."

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* Former Assistant Superintendent, Walter E. Fernald State School.

The above was written soon after the wide publicity that was given to the research concerning the "Jukes" and other well-known defective families and the pessimism was well grounded because about all the information available at the time was obtained from study of institutional cases and the hovel type of defective was very properly commanding a great deal of attention. In other words, the great bulk of information was from a study of those who had already made failures in social, moral, or economic adjustments and were needing institutional care.

The pessimism toward community care which was so marked in 1904 became more so a few years later when researches by Davenport, Estabrook, Goddard and others disclosed the appalling stories of the Nam Family, Hill Folk, Kallikaks, Ishmaelites, etc. It was right at the peak of this pessimism that Dr. Fernald began to get glimmers of something less gloomy in the possibilities of extra-mural supervision of paroled and discharged patients. In his annual report of 1912 he speaks of the increasing number of patients who were being taken out of the School by their parents against advice and who were reporting informally to the School authorities at regular intervals. He still held that permanent segregation was more desirable but recognized the fact that in many instances it was impractical and that the next best thing was some type of extra-mural supervision. In this report he said in part:

"The friends of the older patients who have become strong, able-bodied workers, and have settled down to steady, good conduct under institution conditions naturally believe that these patients ought to go home and work for wages for the benefit of their families. It must be said that many of these older boys who have been trained here have done surprisingly well at work at home. In certain cases where the trustees are unwilling to discharge the patient but have no power to compel custody,

HARVESTING CARROTS
Templeton Colony

he is allowed to go home on trial, reporting in person to the officers of the School at regular intervals. This plan provides more or less supervision over the patient and favorably modifies his behavior and conduct. We believe this informal after-care should be developed and put on a permanent basis. A trained field worker could very profitably spend his entire time looking after these patients on parole, discharged patients in their homes, and in research work relating to the cause and antecedents of individual cases of feeble-mindedness." All this was, of course, previous to the enactment of parole laws and previous to social service as applied to the problem of the feeble-minded.

Thus, after about twenty-five years' experience as superintendent at Waverley, Dr. Fernald became deeply impressed by the ever-increasing number of reports of successful adjustment to community life being made by former pupils of the School. A large number of these were well behaved, industrious defectives from good homes who had been allowed to go out on visit with their relatives and had been discharged after a year at home. Some who had been taken out against advice were reported as doing well and even some of the males who took matters into their own hands and ran away were coming back after a number of years well dressed, with money in the bank, holding fairly good jobs and apparently behaving themselves. A steady accumulation of evidence of this kind led Dr. Fernald to inaugurate in 1916 "After-Care Study of the Patients Discharged from Waverley for a Period of Twenty-Five Years." This study attracted a great deal of attention and exerted a widespread influence in changing public opinion concerning the safety to the community in the return of selected cases of institutional trained mental defectives. There were 646 patients whose history in the community could be obtained and the relatively small number of discharges showed that the policy of long continued segregation was consistently followed during this twenty-five-year period. Dr. Fernald said in part, "We honestly believed that nearly all of these people should remain in the institution indefinitely. Some were allowed to go because they seemed to have no vicious tendencies, and their friends were intelligent and able to look after them, but the majority were dismissed under protest." A great many did poorly, of course, and the majority who got into serious difficulties were those who were taken out by order of the Supreme Court after habeas corpus proceedings, or after other vigorous protests had failed to convince the relatives and friends that the children needed the protection and training of the institution.

The following tables taken from this study showed an amazing number of both male and female patients who had managed to get along without getting into serious difficulty for periods ranging from two to twenty-three years.

To sum up, for 176 discharged female patients, we have the following report: —

Married (11 doing well)	27
Self-supporting and self-controlling, unmarried	8
Working at home under supervision	32
Living at home, not able to do much work	23
Committed to other institutions	29
Died	24
Readmitted to Waverley	33
Total	176

To sum up, for 470 discharged male patients we have the following report: —

Earning a living without supervision	28
Working for wages, supervised at home	86
Working at home, no wages	77
Living at home, not able to work	59
Arrested, but not sentenced	23
Sentenced to penal institutions	32
Committed to other institutions	43
Readmitted to Waverley	68
Died	54
Total	470

These tables indicated that over one-half of all discharged patients, whose history was obtainable, were not constituting any serious menace to the community at the time of the investigation.

At the close of this study Dr. Fernald said: "The results of this survey should be interpreted with great caution. As a rule, the most promising cases are allowed to go home. They have received careful training. The parents have been properly instructed. Still many unpromising cases did well. There was a surprisingly small amount of criminality and sex offence, and especially of illegitimacy. We may hope for a much better record when we have extra-institutional visitation and supervision of all discharged cases. Those with definite character defects, especially those with bad homes, should be discharged with great caution. The survey shows that there are bad defectives and good defectives. It also shows that even some apparently bad do 'settle down'. And it shows much justice in the plea of the well-behaved adult defective to be given a 'trial outside,' for apparently a few defectives do not need or deserve lifelong segregation. It is most important that the limited facilities for segregation should be used for the many who can be protected in no other way."

Another great factor in changing his attitude toward community care was the out-patient clinic which he conducted at the School every Thursday and which gave him an opportunity to see defective children from good homes as well as bad, some well adjusted, others poorly, some well disposed and others more or less serious behavior problems. During the last ten years of his life this clinic became a highly organized, very busy service, used not only by societies and individuals in Massachusetts but also provided much-sought advice to parents from many other States and from foreign countries. These contacts provided him with information concerning the non-institutional types of defectives previously unavailable and convinced him that in many instances custodial care was neither necessary nor desirable. Many of the children who were brought to him were being protected and supervised in excellent homes and were presenting no serious social, moral, or economic problem either in the home or in the community. Many living on farms or in rural communities were harmless and moderately useful and were brought to the clinic simply for advice as to their future management. Dr. Fernald's advice to the friends of these children was not immediate and permanent commitment to an institution in all cases. After describing in detail the possibilities and limitations in training along both scholastic and industrial lines, he emphasized the susceptibility to temptation, especially of a sexual nature, from unscrupulous people and then told them that if the protection and wise management that was evident thus far could be continued there was no reason why they should not remain at home.

Long before this, he had recognized the vast difference between the rural and urban problems as related to the feeble-minded. He knew that many who were leading happy, harmless, and fairly useful lives in the simplicity of a rural setting would become liabilities socially, morally and economically when exposed to the complexities of city life. With this in mind he frequently advised well-to-do city people to search for a country home for the imbecile or moron boy who was becoming a misfit and who was beginning to feel his inferiority in the face of situations which he could not understand. The farm provided simple chores which he could do well, which gave him an outlet for his energies, made him happy and contented, and with understanding people who praised his successes and minimized his failures, he led a placid, harmless and fairly useful existence. Before the days of large institutions, hundreds of New England farms had boys of this type who, trained and protected during adolescence, became valuable farm laborers, performing many tasks which it was difficult to get the ordinary farm hand to do. In fact Dr. Fernald sometimes explained, partly in jest, that putting so many of these boys in institutions was one of the main reasons why many New England farms failed to prosper.

The next and last great factor in changing his attitude toward community care from that expressed in 1904 to that stated in 1924, was the compulsory examination of children of school age who were three or more years retarded in school work. When the results of these examinations began to come in from many cities and towns it became necessary to revise the estimates many times as to the number of feeble-minded in the State. From an early estimate of one or two per 1,000 the ratio steadily increased until it became known that from two to three per 100 of all children of school age were sufficiently retarded to be called feeble-minded. This made it obvious that the cost of giving all of these children custodial care would be prohibitive and the family, social and moral histories in most of the examinations showed that commitment to an institution was neither necessary nor desirable.

Estimates concerning heredity as a direct cause of mental defect were revised downward from 90 per cent to about 50 per cent as a result of study of thousands of non-institutional defectives in the public school clinics and in the out-patient clinics.

These vast changes in the aspect of the problem as a whole made it necessary to formulate plans for the assimilation in the community of about 90 per cent of the known mental defectives while at the same time protecting society as much as possible from the badly behaved defectives, and those from known poor germ plasm stock.

Dr. Fernald organized a social service department at Waverley in 1919, the same year the "School Clinic Law" was enacted, and this department undertook among other duties the supervision of patients on parole or on visit and gave advice to many who had been discharged. He regarded the development of social service both within and without the institution as one of the most important parts of any State-wide plan for community care of mental defectives. The "Parole Law" of 1922 made it possible to remove certain selected cases from the schools under a system of permanent supervised control with the provision that they might be returned at any time to the School to which they were committed. Dr. Fernald was responsible for much of the legislation having to do with the feeble-minded and this was made possible by the publicity given to the lectures which he gave so generously to civil, social and professional organizations. He once said, "Widespread knowledge creates public sentiment, and public sentiment is usually quickly reflected in direct legislation."

In a paper entitled "The Salvage of the Backward Child," published in 1923, Dr. Fernald described the provisions under way in Massachusetts at that time and also expressed, in his usual far-sighted way, his hopes for the future. He said in part: "In this State we have now provided for: —

The mental examination of backward children in school.
The mental clinic.
The travelling clinic.
Census and registration of the feeble-minded.
The special class.
Instruction of parents of defective children.
After-care of special class pupils.
Special training of teachers in normal schools.
Extra-institutional supervision of all uncared-for defectives in the community.
Selection of the defectives who most need segregation or institutional care.
Increased institutional facilities.
Parole for suitable institutionally trained defectives.
Permanent segregation for those who need segregation, especially long-continued segregation of defective delinquents in penal institutions.

"The Massachusetts program proposes to recognize the defective's condition while he is a child, and protect him from evil influences, train and educate him according to his capacity; to make him industrially efficient; to teach him to acquire correct habits of living, and when he has reached adult life, to continue to give him the friendly help and guidance he needs. If conditions are right he may live at home and receive his training in the rural school or in the special class. If he is actually a social menace, he will need the institution. These advantages should be accessible to every feeble-minded person in the State, and not to a few favored persons. The rights of the feeble-minded person and of his family should be jealously guarded, as well as the rights of society. It is most important that the really hereditary defectives should not be allowed to transmit their defect to future generations."

Much of the above has come to pass as Dr. Fernald laid it out but it will require many years of work before this comprehensive institution and community program for the care of the feeble-minded approaches the ideal which he visualized.

FERNALD, FRIEND OF THE CHILD

By Herbert C. Parsons,
Commissioner for Probation

Childhood in Massachusetts gained new ground in public interest and provision because of Walter E. Fernald.

It gained in terms of joy, of freedom, of relief from handicaps, and escape from misjudged, because misunderstanding, treatment. The measure of his contribution to childhood is not fully taken in the survey of the field in which he pioneered in behalf of the mentally disadvantaged. It must reckon, so far as reckoning is possible of changes that are not wholly visible, however real, in the methods and the spirit of education and of correction.

When the trustees of the Massachusetts School for the Feeble-minded, an institution then located in South Boston, announced in their report for the year eighteen eighty-seven the choice of a superintendent, they displayed their confidence in the selection in this fashion: —

> "After serious and prolonged search, the trustees have elected Walter E. Fernald, M.D., the first resident superintendent of the school. They need say no more about him than that his professional and personal qualifications appear to promise success in his responsible and delicate labors."

These were safely restrained words but they do not conceal a confidence beyond the seeming and the appearing. The substantial group of citizens who made up the board, in which rested the whole sum of responsibility for the public care of the feeble-minded, betrayed in cautious terms the assurance they felt that they had secured more than a skilled physician and more than a competent institutional manager. They said, with fitting dignity, we have secured a man, — a man with that quality of sympathetic understanding which all their prior utterances had shown was to them the prerequisite of success in dealing with the class whose need was newly sensed. So saying, they were prophetic. They were speaking for the one hundred and ninety-three pupils of the school in that year; they were speaking for the vastly larger group they knew awaited like provision; they were speaking for childhood in every phase of special public concern.

Dr. Fernald's early years in Massachusetts were quite too intensely devoted to the interests of the school to give room for another thought. His first report was as brief as it was formal.

His second recorded the provision for buildings on the newly purchased land in Waltham. Presently there came the plea for manual training. In successive reports may be traced the widening of his vision and the deepening of his philosophy, until even these always succinct messages begin to reveal an interest in the child other than the one whose mental disadvantage commanded society's specialized attention.

In the many addresses which in the course of all his years found their way to print, there is a confinement to the problems within his distinct field that leaves slight evidence of Fernald's broader concern in childhood. It would be an incomplete review of his service, a partial picture of his leadership, that failed to record his association with educators, with reformers in the dealing with delinquency, with the pioneers in the new science of social service. Here the evidence will be scantily documented but abundantly supplied out of the recollections of the men and women with whom he came into fruitful comradeship.

The sum of such testimony as his contemporaries would abundantly yield would give him the rating of a statesman in his day and generation. Statesmen are necessarily more than specialists — and even the high specialization of his interest left ample margin for the other contributions to statecraft which establish Fernald's right to the designation. As he went about the State, traversed its length and breadth, reaching the people in large assemblies and in small, in public hall and church, in the country schoolhouse and in the home where neighbors gathered, the apostle of care for the long neglected defective, he first of all prepared the common mind of the Commonwealth for the ready support of whatever legislative project would put policy into practice and effect as to these objects of concern and care; and, as incident to such particular advance, he stirred the thought and the heart of the people in behalf of every other child with a claim to community attention. The by-product proclaimed the joint working of a broad understanding and a capacious heart.

School men came to sit at his feet. He had a definite need to press upon them but, as well, he had a word for them as to their own methods. The instruction of the feeble-minded was pioneering in methods of instruction which had no such limitation. It was the first occupant of the new territory of habit-training. It sent back to the common schools the demand for adaptation. It contributed to the abandonment of the lock-step in grade work. At Fernald's hands, in the main, as was befitting his definite errand, it charged the schools to take up their duty to the retarded.

The fashion in which he challenged school people is revealed in an address given at a meeting of the Harvard Teachers' Association in nineteen hundred and twenty-three. It depicted the change of view, in which he frankly shared, as to the feeble-minded, and it put a definite responsibility upon the public schools. Thus spoke he: —

> "Until a few years ago, the literature of mental defect emphasized three main concepts. The first was that nearly all feeble-mindedness was highly hereditary. The second was that the feeble-minded were almost invariably vicious and immoral, if not criminal. The third was that they were generally paupers and vagabonds and were not capable of supporting themselves by their own labor and that they must be supported at the public expense.
>
> "But within a few years many things have happened to make us believe that we have been far too sweeping in our generalizations and deductions.
>
> . . . "The work of salvage must be done in the public schools. It can be done in no other place."

Then he pursued the subject — and the educators — with definite and insistent demands, declaring that the school grades were capable of adjustment on the basis of mental age, and that "there is no special pedagogy for the feeble-minded." The conditions are different, progress is slower, much graphic school material must be used — and the essential in dealing with the handicapped was reached in his command, "Let him achieve success every day." Under cover of his special plea, Fernald was — perhaps unconsciously — teaching the teachers fundamentally and universally.

By the open path from the regions of the care and training and practical social salvage of the feeble-minded to the domain of treatment of the juvenile offender, Dr. Fernald came easily to recognition in the field of law and practice as to the young delinquent. He was companion of the pioneers in a distinct judicial process and outfit for the child breaker of laws framed, in the main, for the fully responsible adult. He consorted with Harvey Baker, first judge of the Boston juvenile court, and others of the crew who in nineteen hundred and six wrote a fostering and saving code for children and created the one court set apart for its operation. The companionship was not deferential to him as a helpful specialist; it was wholehearted appropriation of him as a guide to wisdom in child treatment.

Moreover and practically at the same time, the forward-moving men and women who were trying to modify the rigors of the punitive scheme of dealing with adult law-breakers found him their ally. Here again there was no draft upon him for professional contribution, helpful in a restricted degree to their development of new instruments, but actual assignment of leadership. When, in 1910 the Massachusetts legislature was stirred, as somewhat in cycles legislatures are stirred, by an increase, actual or alleged, in the volume of crime, and took the traditional course of establishing a commission to discover the facts and disclose remedies, the Governor placed Dr. Fernald's name first in the group along with the warden of the State prison, the superintendent of the State farm and two other institutional heads.

Among the contributions to knowledge of crime conditions and treatment, the report of the Commission made to the Legislature of nineteen hundred and eleven* is recognized as permanent. It proved to be immediately effective and innovating. Its outstanding product was the recognition of the defective delinquent as a special character and the provision of a separated process for his treatment. The legislative act it proposed as to the defective delinquent was the initial point in what in a few years, after a queer interval of suspended animation, was to be a most significant departure in corrections.

The pages of the report of the Commission of nineteen hundred and eleven which are devoted to juvenile crime are compendious of the whole gospel as to youthful delinquency, not alone for that time but for all time, at least so far as the subsequent twenty years have revealed. "The crime problem is the boy problem and the girl problem. . . . Transition from occasional crime to habitual crime usually occurs during adolescence. . . . Districts thickly populated. . . . Bad housing produces weak and inefficient people not equipped to fight successfully the battle of life. . . . One or both parents defective mentally — not up to the standard in health and strength. . . . Children of newly arrived immigrants, under new conditions of living. . . . Nothing more disastrous than the loss of parental care in early life. . . . Few opportunities for play. . . . Forced into crowded streets of the slums. . . . Truancy, followed by stealing. . . . Bad heredity, bad environment, creating a class not able to resist temptation."

Random chipping from the report's survey of conditions proves it the high-grade ore from the mines of keen prospectors. Further on, the material is smelted into the purest metal of a program to which the next two decades have added nothing and have done their most and best in putting into use. It was not a State prison warden, facing the crime problem, nor the superintendent of a hospital for the insane, facing mental disorder, who was going into the depths of the earth, socially speaking, and bringing truth to the surface and directing its use to practical and adorning ends. It was unmistakably the man who had broadened from the task of caring for feeble-minded children to leadership in the field of juvenile social economics.

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* Legislative Documents of 1911, Report of the Commission to Investigate the Increase of Criminals, etc.

Eight years later than this revealing incident in Dr. Fernald's service to the cause of childhood, the General Court found occasion to create another commission. Now it was the problem, as indicated in the title, of the Control, Custody and Treatment of Defective Criminals and Misdemeanants. The legislative resolve named various public officials as its members, four of the six being executive heads of state departments. Dr. Fernald's standing in the field, only a sector of which was within his official control, was certified by his designation as chairman.

No one contribution to the discussion of the persistent problem of treatment of the supremely troublesome groups named in this inquiry has matched in value the report of nineteen hundred and nineteen. It was phrased by a master in expression on social themes, Robert W. Kelso, Esq., the commission's secretary; but the scope and the method of the inquiry and the conclusions reached were the constant concern of Fernald. Within the report along with a searching study of corrections in general, there stands out the keen and broad-visioned dealing with juvenile problems. Again it is the champion of childhood whose philosophy illuminates a public document.

The institutional treatment of juvenile offenders, the county schools for school offenders, the defective delinquents — thus far in hibernation under a cold blanket of legislative neglect — the feeble-minded, along with adult criminals, has the commission's attention, with the child standing out as the central and the hopeful figure. No pages of its report* are more luminous than the one devoted to the insufficiency of the juvenile court system. For the fulfillment of the declared purpose of the juvenile delinquency law, now thirteen years on the statute books, it declared for the provision of juvenile judges, either in each court or in groups of courts, in order to "secure a high standard in the treatment of these cases, which, more than any others, demand a thorough and skillful, as well as sympathetic, handling by the courts." Six of its eight recommendations for legislation relate distinctly or inclusively to the interests of children, and subsequent enactments of progressive character have followed the suggestions which were not less than long steps towards a perfected system.

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* Legislative Documents of 1919, House 1403.

The testimony of such documents as the reports of the commissions of nineteen hundred and eleven and nineteen hundred and nineteen is but a fraction of the support for the recognition of Fernald as the champion of childhood. In the richness of his later years, when the spirit was all the while expanding, when a judgment as practical as it was broad was ripening, when contribution of a deep understanding and a profound sympathy was adding to achievement, to the end of his luminous life, Dr. Fernald made secure his title to lasting recognition as the friend and attorney of child life, the community's chiefest treasure, hope and responsibility.

RESEARCHES IN FEEBLE-MINDEDNESS WITH SPECIAL RELATIONSHIP TO INHERITANCE

By Abraham Myerson, M.D., *Professor of Neurology, Tufts College Medical School. With the collaboration of* Henry B. Elkind, M.D., *Director of the Massachusetts Society for Mental Hygiene;* Louis Ullian, M.D., *Assistant Visiting Physician, Boston City Hospital, and* Hannah Smith, *Field Worker.*

HEADING FOR THE MONOGRAPH

"That the conditions of the natural environment of man must be modified if the body is to survive has long been recognized; but the fact that the mind is incomparably more delicate than the body has scarcely been noticed at all. We assume that the disorderly environment with which we surround the mind has no effect, and are ingenuously surprised when mental instability arises apparently from nowhere. But though we know nothing of its origin, our temerity in applying the cure is in no sense daunted." — *W. Trotter.*

ACKNOWLEDGMENTS

This research was financed by the Mental Hygiene Division of the Department of Mental Diseases for the Commonwealth of Massachusetts. Our thanks are therefore due to Dr. George M. Kline for his hearty co-operation and ready financial help and to Dr. Douglas A. Thom for his co-operation in obtaining funds.

To the lamented Dr. Walter E. Fernald, we owe more than can be expressed. In the first place, he turned over his records and his patients for our study. In the second place, we obtained through him the co-operation of his staff, to whom, individually and collectively, we owe our thanks; and, in the third place and most important of all, he gave us the benefit of his experience and his wisdom at all stages of the research.

Likewise, we are under a burden of obligation to Dr. George E. Wallace, head of the State School at Wrentham, for his complete and hearty co-operation in the analysis which was made of the statistics of his patients.

In fact, it may be stated that everybody connected with the Department of Mental Diseases and the officers and workers of the Walter E. Fernald and Wrentham State Schools lent their energies and an amiable spirit of co-operation to the research. If, in any way, our efforts have contributed to the study of feeble-mindedness, theirs is a very large share of the credit.

CHAPTER I

NATURE OF FEEBLE-MINDEDNESS

The main difficulty with any definition of feeble-mindedness is the difficulty of which Bacon speaks; that a word used with common or vulgar meanings has been accepted by the scientific-minded and thus diverse sets of meanings are combined in one word. A medical term should be fundamentally biological in origin and in significance, but unfortunately the maladjustments which are denoted in the term are largely communal and social, so that no biologic definition can be definitely made. Furthermore, in the department of knowledge called psychology the prime essential of scientific method, namely measurement, is only in a limited way present. Though we have in some degree approached exactness, scientific measurement in the field of the human mind is more of a promise than a fulfillment.

The term feeble-mindedness might readily denote that there was a defect in all the qualities of the mentality. Since mind in its largest aspects embraces those affective qualities called feeling and emotion, that mixture of affective and effective reactions called instinct, the conglomeration of reflex and purposive strivings of the organism which we may sum up under the old-fashioned term "will," as well as the sum total of cognitive stores and responses which we call intelligence, the term feeble-mindedness might mean feeble emotionality, feeble instinct, feeble will, and feeble intelligence, as well as "feeble" conduct. But, no matter how much out of control a man's emotions may be, how prone to anger, fear and disgust, we do not consider him nor think of him as feeble-minded so long, let us say, as he is able to remember and reason well and so long as he is able to pass certain types of tests in which emotion is not at all involved. Nor will any psychiatrist or psychologist dream of calling a person feeble-minded whose defect is that his purposes are so scattered that he follows no consecutive trend in his activities, who fails in life as utterly as if he were stupid, because he cannot discharge his energies coherently and intensively.* In other words, no feebleness of will, *per se*, constitutes feeble-mindedness. And similarly with the instinctive reactions; no sexual pathology — whether perverse, autoerotic, hypererotic or anesthetic — is denoted by any clinician as feeble-mindedness, no matter how grounded it is in congenital defect. So that we are left with a definition by elimination, viz. — that the essential set of congenital or constitutional defects by which the term feeble-mindedness is to be defined lies in a special group of attributes which are summed up under the term intelligence.

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* It is curious to note, however, that Davenport[5] and Pearson[12], whose respective schools of biometric approach to eugenics have rarely been in over-polite agreement, have as a sort of statistical despair over the problems of feeble-mindedness, come to the conclusion that mental defectiveness includes defects of character and conduct as well as intelligence defect. Such a stretching of the concept would defeat all efforts to study feeble-mindedness.

But the term intelligence, like every abstract term, every general term, can best be understood when we refer it back to the particulars out of which it has grown. "Intelligence" does not exist as such; it is of the same class as love, honor, duty, i.e., an abstract concept built up of the concrete particulars of experience. People are intelligent when they can remember and learn well; when they can judge well; when they can learn by direct or indirect experience. As we survey the biological evolution of mentality we find that intelligence is a rather late arrival on the scheme of things, and we may correlate it with the appearance of the cortex in the evolution of the brain.

In the face of a wider and less predictable environment intelligence acts, first, to store up past experience so that it may govern conduct. Thus memory becomes its prime ingredient and the learning process its main avenue of expression. Foreseeing the future in a conscious way, planning capacity and choice of means of action become essential, and thus are phases of intelligence. The diversity of things is too difficult to deal with successfully, hence intelligence must analyze, unify and organize experience in order to simplify reactions. Thus there is an analyzing-organizing factor in intelligence, the energy of which runs parallel with the range of intelligence, and therefore is almost lacking in the lower grades of people and becomes increasingly more manifest as we reach the highest grades of human beings. In other words, intelligence seeks to accomplish the instinctive ends by other than the instinctive methods, seeks to overcome obstacles which instinct alone cannot overcome, and uses against a more complicated world a wider range of techniques. That all this later develops into something not so simple — into something which contemplates itself, which becomes an *end* instead of merely a *means* is a phase of the evolution of intelligence which I need not discuss here, *since in the case of the feeble-minded this angle of intelligence does not become important.

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* In the stimulating work, "The Philosophy of 'As If,'" Vaihinger[16] says:

"For thought originally only serves the Will to Life as a means to an end, and in this direction also it fulfills its function. But when thought has broken loose from its original aim, according to the Law of the Preponderance of the Means over the End, and has become an end in itself, it sets itself problems to which it is not equal because it has not developed for this purpose; and finally the emancipated thought sets itself problems which in themselves are senseless: for instance, questions as to the origin of the world, the formation of what we call matter, the beginning of motion, the meaning of the world and the purpose of life. If thought is regarded as a biological function, it is obvious that these are impossible problems for thought to solve, and quite beyond the natural boundaries which limit thought as such."

Referring back to the particular defects by which we diagnose feeble-mindedness, we find certain outstanding anomalies in mental development. It has not often enough been emphasized that there is an extraordinary significance in the parallel appearance of walking and talking. By walking the child passes from the sessile stage, where his experiences are limited, to a stage where he becomes the creature of an enlarged environment with a capacity for picking up many new experiences and by which he is forced into more adaptations. That walking occurs ordinarily by the end of the first and more frequently in the first half of the second year of life is well known. That the bulk of the feeble-minded learn to walk later than the normal is an expression of backwardness either in the development of the nervous tracts by which balancing and coördination are brought about, or else *it is an expression of a lack of interest in the environment*, in a word, that the spur to walk does not arise at the ordinary time. The alert child sees in the environment things which interest and excite him, and, therefore, he walks, when the neuro-muscular mechanism is ready. But the feeble-minded child, one of whose definite defects is a *lack of organized interest* (or better, an incapacity to organize interest) in the environment, may have the nervous tracts developed but, lacking the immediate spur, is delayed in his walking. In a general way the more seriously involved the mentality, the greater the delay in walking.

Similarly with talking. The first few words come at an early age, perhaps at one year or somewhat later, in some instances earlier. Talking, however, as an organized means of communication becomes of importance at about the age of two. Talking is an expression, first, of attention to the social environment, since it largely springs from what we call imitation, * but back of that imitation are active desires, one of which is to be in contact with the social environment. It is a marvelous accomplishment when the innately meaningless sounds by which we speak become charged with significance to the infant, when somehow or other gradations of meaning become linked up with definite but arbitrary conglomerations of consonants and vowels.

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* Imitation is as much a manifestation of social feeling as it is of intelligence, or perhaps more nearly correctly, of interest. The imitative child seeks not only the new experience, the new and comprehensible experience, but also to enter into fellowship with the one it imitates. This is important in understanding the mental growth of children, because the parent whose life and acts win the interest of his child becomes not only a model but also a fellow, for whose fellowship the child yearns. The sympathetic and understanding parent, who encourages the social-fellowship feeling of his child, becomes a factor in the development of his child's interests, and thus becomes a spur to his child's intelligence. Thus environment, in the shape of the parent, becomes a factor in the growth of intelligence. I realize fully how unorthodox this will seem to those psychologists who tend to minimize the environmental factor in intelligence.

Therefore, there must be not only the coördinated capacity of tongue, lips, larynx, chest muscles, — in short the mechanism of word production — *but there must be also a capacity to associate meaningless sounds with objects, a capacity to become aware of meaning.* In the case of the feeble-minded there is almost always delay in this capacity to speak. The low-grade feeble-minded may not learn to speak at all; the imbecile may be delayed until the fourth or fifth year; a moron of the high-grade type may scarcely be delayed at all. While it is true that some intelligent children, due to some special defect of auditory memory, or to a lack of the desire to communicate, may be delayed in speaking, any serious delay in the acquirement of this function is strongly suggestive of feeble-mindedness. That part of the delay is due to a lack not only of the capacity to associate meaning with syllables of speech, but also to a lack of interest in the environment is a conclusion difficult to prove, but is borne out by the other considerations later to be dealt with. Thus the two great means of getting experience, walking and talking, are tardily, often defectively, developed in the case of the feeble-minded, and the means by which experience is gained and stored up in concrete form in the coins of memory, words, is especially defectively developed.

The grossly feeble-minded are soon discovered by these two crude but effective tests of mental development. Another test, which is more nicely social in its significance, is the ability to control bladder and bowels in response to the esthetic demands of the society into which the new individual comes. It is obvious that the hypothetical primitive man would lay no special stress upon cleanliness in the education of his child, and it is just as obvious that there is an early demand upon the child born into civilization that he exercise control over the expulsion of the excreta. *The average child learns control of bladder and bowel about the same time that he learns to walk and talk.* The low-grade feeble-minded may never learn; the higher grade usually learn tardily. While it is true that a non-feeble-minded child may lack control of the bladder sphincter, as in the well-known condition of enuresis, it may be stated that a failure of control of bladder and bowel always brings up the question of feeble-mindedness. This social maladaptation, in some types of the feeble-minded, is due to organic defect of the nervous system or of the sphincteric muscle but in the most of cases it is due to a failure to understand the attitude of the people one comes in contact with. It is a failure to enter into the social scheme of cleanliness; it is a failure to control a bodily urge in response to a social urge.

In a primitive society where there were no schools and where the child passed from his earliest activities of play into hunting, fishing, etc., a very large number of those whom we class today as feeble-minded would avoid detection, because the demand made by successful hunting and fishing is not beyond the higher moron type.* *The school becomes the great detector of the mentally deficient.* Though the feeble-mindedness of the child may have escaped the notice of his parents, it rarely fails to become evident early in the school history. In the case of the grossly feeble-minded school-learning capacity — that is, the capacity to remember the arbitrary symbols connected with written speech and with numbers — is so low, that all advancement rapidly ceases. To associate a symbol, *e.g.*, "A," with a sound, to place in juxtaposition a certain number of such symbols to mean the animal, cat, is no small achievement and the grossly feeble-minded child either is incapable of that achievement, or takes so long to bring it about that his advancement in regular schools is impossible. More difficult is the handling of the arbitrary symbols for quantity, so that it is the field of mathematics which forms the greatest single obstacle to the advancement even of the high-grade feeble-minded, for the capacity to be interested in abstractions and the capacity to deal with them is a high-grade function of the intelligence and one which forms a real test of the higher qualities of the learning capacity.† Either because the child is not interested, or because his mental organizing powers are low, concentration is difficult and thus a vicious circle is established which results in school failure of a gross kind. Therefore, it may definitely be stated that any child who gets through the grammar grades fairly on its own merits is not feeble-minded and that rarely does a technically feeble-minded person get beyond the sixth grade. Without going into the details of the defects of the learning capacity, it is quite certain that the school-tests readily grade the degree of feeble-mindedness above the idiot and low-grade imbecile level, since these rarely reach the schools at all. What we call the higher imbecile seldom gets beyond the third grade; what we call the high-grade moron rarely advances beyond the sixth grade on his own scholarly merits.*

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* Note: In the "Development of Intelligence in Children," by Binet[2] it is stated: "A peasant normal in ordinary surroundings of the field may be considered a moron in the city. In a word, retardation is a term relative to a number of circumstances which must be taken into account in order to judge each particular case."

† Bleuler[3] very aptly calls this *the adhesion to the concrete* of the oligophrenic (Kraepelin's term for the feeble-minded).

Personal tests: In examining prisoners in the jails, and individuals of various intellect levels, one of the outstanding differences between the low- and high-grade individuals is the graded range of interest and the graded ability to deal with the abstract. Social and communal interests run roughly parellel to the range of intelligence, and real interests run roughly parallel to the range of intelligence. Real interest in abstractions appears only with the better intelligences. Of course, there are high-grade individuals who have very narrow and egoistic interests. These are exceptional, whereas the low-grade individual who has widespread social and communal interests is unknown.

At once it becomes evident that a large part of the problem is a social one; that at any rate society builds up the criteria by which the feeble-minded are distinguished. That there are biological defects which are distinguished by the social criteria is, of course, true; but with the advance of social demands, with the increasing qualifications which society demands of its citizens, the amount of feeble-mindedness increases. An individual living in a simple community where after little or no schooling he passes onto the land as a farmer, or (for the girl) into the home as a wife, or takes up some relatively simple occupation might pass as somewhat inferior but without any definite stigma as feeble-minded. But where society demands that before an individual goes into a gainful occupation he reach the age of fourteen or sixteen and that that relatively long period be passed in the acquirement of knowledge involving abstractions, involving interest in things of no apparent value to the individual himself, then those individuals who, for one psychological reason or another, cannot remember these abstractions, cannot form these arbitrary associations, become a problem and therefore noteworthy. Where the incapacity to learn what the school teaches brings with it either success or failure in life, the defect, in a society now become keenly conscious of its obligations to its members, brings the defective individual into sharper attention.

This does not tell us why a certain level of intelligence is feeble-minded and the level, let us say, just above it is non-feeble-minded. Why, for example, is a mental age of eleven or ten and one-half — or whatever you please — the upper limit of the high-grade moron, and why is a year more non-feeble-minded? The answer is that the upper limit is in part arbitrary and based upon historical and social considerations rather than upon any biological standard, and in part rests upon rather dubious statistical considerations.† It happens that certain social situations arise which either make the care of the feeble-minded child difficult or make his remaining in society troublesome. As Dr. Elkind and I will show in our analysis of the reasons for admission to the Wrentham State School, social considerations form an important set of reasons for admission to a state school, and it is upon the experience in state schools that the original concept of feeble-mindedness rests. The low-grade feeble-minded demand a great deal of care. They cannot be sent to school; they do not learn to keep clean; they are disagreeable to have around, and so in a poorly-equipped home, or a home in which there is too much of a burden already upon the housewife, the human recourse is to turn the child over to the care of the State. Those of the higher grade who, as they grow older, happen to come into conflict with social ethics, who steal and violate the sexual code, are particularly difficult to handle because they cannot learn by experience and so they, too, are committed to an institution. The actual reason for sending them to institutions is social since more intelligent people committing the same offences are sent to jail. The criteria by which they are judged feeble-minded has become increasingly difficult to define when by studies of the whole population we become acutely, painfully, aware of the fact that the range of intelligence is much lower than we had hitherto believed to be the case.* As time goes on the mental level at which an individual is declared *not* to be feeble-minded becomes lower, so that today many psychiatrists and psychologists are averse to the term feeble-mindedness at an adult mental level of eleven, whereas there was a time when thirteen and fourteen were believed to show deficiency.†

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* At the Walter E. Fernald[7] School for the Feeble-minded, at Waverley, Massachusetts, it was long ago discovered that there was a very close relation between school progress and I. Q. The exceptions may thus be stated: Now and then an individual of good intelligence is slow in his school progress, and there may be some psychological factor other than intelligence at work in such cases. The feeble-minded, however, almost never rate higher in school than their I. Q. warrants. The reports of the Walter E. Fernald School for many years bore this out.

† For a discussion of this matter see the writings of Terman[15], Wells[19], Pressy[14], Porteus[13], Goddard[8], and Wallin[18].

The writings of Wells are especially valuable for a critical examination and evaluation of the present-day psychometric conception of feeble-mindedness.

An excellent discussion of the whole subject is found in Davies[6].

Hexter and I "have criticized very forcibly — whether rightly or wrongly — Brigham's" findings in relationship to the intelligence of the immigrant.

The relatively simple criteria of feeble-mindedness above discussed do not, of course, comprise the sum total of the diverse pathological characters which may be presented by the feeble-minded. In the young and low-grade feeble-minded a decided restlessness is seen, largely due to the fact that the diverse stimuli which comprise the environment offer themselves with more or less unselected equality, thus arousing a disorganized reaction. The capacity to select from the environment the objects of attention, the ability to pay attention in an organized way, is a relatively high-grade quality and the young moron and the low-grade feeble-minded, therefore, find this selection difficult. This restlessness tends to disappear, as even in these individuals an organization around definite trends and definite interests in a habitual way takes place. With this restlessness is a certain destructiveness which represents a low-grade curiosity reaction. Sometimes the feeble-minded are brutal and irritable, but much more often they are docile, are picked upon by the more intelligent, and become the butts of their contemporaries in time but their superiors in mentality — the other children. But brutality and docility are not traits necessary for the diagnosis of feeble-mindedness. Likewise with fear; many of the feeble-minded, while being examined or when placed into a new situation, show a panic of extreme type and seek to escape in a wild or flutteringly disorganized way. This is because the situation into which they are put is unfamiliar and incomprehensible. In many individuals not feeble-minded, unfamiliarity and incomprehensibility become readily transformed into apprehension and panic. But even the feeble-minded individuals may be trained into quiet, if not into understanding. Fear itself is no fundamental characteristic of the feeble-minded, as the widespread anxiety neurosis, a state far more common among the intelligent than the feeble-minded, shows. Thus of two cretins with the same mental age, the same general physical development, one may show extreme panic during the examination, the other lend himself smilingly and quietly to the procedure. In other words, as has been emphasized in the beginning of this paper, emotional states as such are not relative to the understanding of feeble-mindedness, though pathological emotional states are often enough associated with feeble-mindedness. Again the high-grade feeble-minded are often lazy, inert, unwilling to exert themselves, and become the loafers of the country town, the odd-job doers of each community, working only under the pressure of necessity, tending always to a quiescent, ineffective life. But a very much larger number of these high-grade morons are docile, industrious,* easy to get along with, readily follow those instructions which they comprehend, and seek, with the same social instinct that governs the life of the normal, to be in harmony with their environment. The concept that the feeble-minded form the bulk of the delinquent classes has passed away;† it represented a naïve overgeneralization and did not take into account that what we call character, or the sum total of attributes, is not necessarily greatly influenced by those qualities which we lump together as intelligence.* The feeble-minded, especially the moron girls, are often enough sex offenders. More properly, they are the sex offenders who get caught, and if it were possible to make a complete cross-section of the sex offenders of our times, the feeble-minded would present no preponderance of personnel. It is often enough true that the sex life of the feeble-minded, especially of the feeble-minded male, is explosive — bursts out into an overaction often hideous and starkly cruel. But many feeble-minded seem to have no sexual life at all, pass along without apparently sexual desire, are almost asexual.† Autoeroticism is common amongst the low-grade feeble-minded and represents here a pleasure seeking easily obtained — a pleasure seeking which, finding few other outlets, expends itself on the individual's person. Yet autoeroticism is so common that while it may be more prevalent among the feeble-minded than in the non-feeble-minded population (which I doubt), it does not represent anything *per se* feeble-minded. So one might run through the whole gamut of human emotions, human instincts, human qualities, and find that while the feeble-minded present in this or that field striking anomalies, in the main it may be stated that the association of other pathological mental characteristics with feeble-mindedness is in large measure incidental; that the diagnostic criteria arrange themselves completely and definitely around the varied qualities of poor learning capacity, of ineffective, delayed, or poor motor reactions, of limited range of interest and curiosity, of an impaired adjustment to life, which in the low-grade requires the simple hospital atmosphere, and in the high-grade may be successful enough. In fact, with the present organization of society the low grade mentally are very useful persons, carrying on activities which the higher grade refuse to do, sparing the rest of society disagreeable tasks, and are — so to speak — the helots of the social structure.

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* See Brigham's[4] "American Intelligence" for a typical example of the actual low-gradedness of our population. The views of Mencken and Nathan and the satirical authors from time immemorial find rather startling justification in the results of widespread intelligence tests carried on in the adult population.

† Goddard[8] asks, "Is it not possible that during all these years we have placed the limits of feeble-mindedness too high? Is the real limit seven years instead of twelve?" This from the learned and zealous discoverer of the moron.

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* See in this connection the experiences of Dr. Charles Bernstein[1], whose social placing of the feeble-minded under his care has become classical.

See also discussion by Davies[6].

† Of the bulky literature on this point I select the work of Healy and Bronner[9] as representing a most careful study made by two devoted and highly intelligent investigators, whose results bear all the earmarks of dispassionate scientific judgement:

"On the one hand these figures show clearly that the mentally abnormal among delinquents constitute a much greater proportion than is found among the general population. Yet, on the other hand, those who have so stressed the part played either by feeble-mindedness or mental disease in the production of delinquency will obtain from these most carefully developed findings small support for their extreme statements."

This whole book treats the problem of delinquency in the juvenile population in a most enlightened and candid way and is perhaps the most important book on this subject in the literature.

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* The whole conception of morality and character is changing in our time; there is a huge revolt against the conventional virtues and characteristics. The kind of conduct denounced in vigorous terms by the social investigators in their writings on the characteristics of the Jukes, the Kallikaks, the Nams and families of like renown are extolled by the "advanced" writers as characteristic of the finest and best type of human being, at least of the artistic type of human being; while the solemn social virtues, as they are conceived of by the orthodox social student, are denounced as babbittry, rotarianism, and the like. The plays presented on the modern stage, the books which make the deepest impression, documents purporting to be social in their evaluation of life, all stress as rather fine qualities which in the Kallikaks and the Jukes would be called vagrant, promiscuous, and the like. On the whole, there is no direct relationship between the intelligence and the acceptance or rejection of the conventional code. Certalnly one would not classify Goethe, Napoleon, Caesar, Benjamin Franklin, Rousseau, Voltaire, to say nothing of characters nearer our times, as feeble-minded or of low intelligence.

† Walter E. Fernald[7] states as follows: "Apparently the discharged female patients have not contributed largely to the sex and venereal problem."

Of the 470 males 13 had married and have 12 children. "There was a surprisingly small amount of criminality, sex offence and especially of illegitimacy."

George L. Wallace[17] remarks: "The feeble-minded girl who indulges in illicit sex pursuits always gets into trouble one way or another, and is usually early discovered. The girl of normal intelligence similarly engaged is infrequently discovered."

It is a profoundly important fact in the history of medicine, as it is in the history of all human thought, that the early stages of hazy knowledge are marked by overgeneralization. I like to call this the "all cats look grey in the dark" phase of thought. For example, when little was known about insanity, about mental diseases, all mental aberrations were classed together under the heading, insanity. A unity was postulated which was based only on one thing — uniformly prevailing ignorance. Put mathematically the generalization was a function of the ignorance. As time went on, as facts accumulated, the unity was split up into units biologically different and having only one quality in common; namely, that the law regarded individuals suffering from these particular diseases as lunatics in order to commit them to an insane hospital. Thus we learned that certain mental diseases were caused by syphilis, others by alcohol, still others by changes in the brain brought about by trauma and especially by arterial disease. Still others of unknown origin ran in family groups, such as manic depressive psychosis and, to a lesser extent, the conglomeration called dementia praecox.* In a similar way we must approach the problem of feeble-mindedness and realize that the unification under one term represents merely ignorance and does not stand for an underlying unity. Therefore in the discussion of the inheritance of feeble-mindedness we are necessarily thrown back on the *inheritance of the various types of feeble-mindedness,* agreeing that we are able to define what is feeble-mindedness, which we have seen is somewhat of an assumption.

It is necessary to emphasize that the personal researches which form the basis of this paper represent the state hospital type of feeble-mindedness — a selected group brought together in institutions for social reasons or under the pressure of social forces — the segregated type. Other researches have shown that the great bulk of the feeble-minded, especially of the high-grade type, never reach the institutions and that our institutions would have to be enormously enlarged to accommodate even a fraction of those who, by our present criteria, are called feeble-minded. Our selected group was studied in two institutions: The School for the Feeble-Minded at Waverley, then under the leadership of the lamented Walter E. Fernald and since named after him; and the school at Wrentham under the leadership of Dr. George E. Wallace. In the first institution a clinical genetic study was undertaken. Dr. Louis J. Ullian carried on the bio-chemical studies; Miss Hannah Smith acted as field worker; and I directed the researches, as well as making the physical and neurological examinations. Thus our study was based on the technique and criteria of medicine, namely physical examination, biochemical studies, family history, personal examination of siblings and relatives wherever possible, utilizing to the full, of course, the psychological and other studies of the Waverley institution. The material was at first evaluated non-statistically and later, through the coöperation of Dr. Henry B. Elkind, was evaluated statistically. The second was a statistical study made of the Wrentham population — past and present — by Dr. Henry B. Elkind, Miss Smith and myself. This latter study will form a separate part of this paper.

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* For a more detailed discussion see the Inheritance of Mental Diseases, by A. Myerson[11].

It is with the first study that the directly succeeding pages concern themselves. We divided up the feeble-minded at Waverley into groups. The classification was based on certain criteria differing in kind with each group, so that no unified scheme of separation was followed, because this is impossible in the present state of our knowledge. The first group is that of the cretins, who look alike and have as the basic underlying defect a deficiency of the thyroid gland. This group is small in number but of great theoretic importance. The second group is a larger one, also made up of individuals looking alike and presenting a unified group of characteristics, but whose etiology is at present unknown though many interesting speculations have been made concerning them. This group is the so-called Mongolian idiots, a name utterly wrong in that they are only superficially like Mongolians and that many of them are not idiots by our present classification. The third group constitutes those individuals who present definite signs of organic disease of the central nervous system; paralyses, organic tremors, organic choreas and similar symptoms, the so-called spastic group, although this term should be discarded and we shall consider them under the heading of the organic group. The fourth group constitutes two miscellaneous series, both characterized by abnormalities of the size of the head: the one in which the head is abnormally large due to disorder of the circulation of the cerebrospinal fluid — namely, the hydrocephalics; the other very small group in which an opposite appearance is presented superficially in the size of the head; the head is abnormally small, and these are called microcephalics. As a matter of actual fact both these types of individuals might better be included under the head of the organic states, since they are fundamentally organic. But because they stand out so dramatically from the general population of the feeble-minded in these schools they have been studied separately. The fifth group constitutes the so-called congenital syphilitics, a group concerning which there has very recently appeared considerable scepticism. This group is identified by a positive Wassermann reaction with or without signs of congenital syphilis. Whether or not these individuals owe their feeble-mindedness to syphilis is a matter which we shall discuss later, but for the time being they can be considered together under the heading, not of congenitally syphilitic feeble-minded but as, more certainly, the syphilitic feeble-minded, since the doubt in their case is whether or not the syphilis is the cause of the feeble-mindedness. The last group is the most important because it is overwhelmingly the most numerous, and we have called it the unclassified group, meaning by this that in the present state of our knowledge we have no hint as to causation, although heredity has been largely blamed. Since heredity as an explanation or basis of classification is always open to suspicion I have avoided the use of this heading in our studies and use the term "unclassified" as synonymous with "unknown." Individuals of this group present a varied aspect. In many instances they show gross anomalies of appearance; in others no anomalies of any importance are present. They represent the group most commonly remaining in the community. There is, I believe, a disproportionate number of morons amongst them. In a general way they approach more nearly the diversity and the characteristics of the normal population, and they represent the most difficult social problem. After all is said and done, institutional care of the cretin, the Mongolian, the spastic type, the idiotic hydrocephalic, the grossly monkey-like type of the microcephalic presents no special difficulties and arouses no particular emotions except of horror and pity. But among the unclassified we find individuals who approach the normal in appearance and action; we find persons who carry on in the community and who have access, so to speak, to copulation and reproduction; who pass amongst the mass as relatively normal. This unclassified group then probably represents our greatest problem and it is concerning this group that we have the least definite knowledge.

Such a series of groups does not by any means completely analyze the feeble-minded. It is perfectly obvious that among the unclassified are individuals with endocrine dysfunctions, the only difficulty being to state which endocrine gland is involved; a more important difficulty being that endocrine therapy is of relatively little value in these cases. There are other individuals also studied in this paper who represent the sense-defect type of feeble-mindedness: the deaf individuals, the blind idiot.

As the last part of our Waverley study we have investigated certain outstanding family groups, families in which a large amount of feeble-mindedness has been found, several members of which are or were at the Walter E. Fernald School, and have taken special care to follow them into the community and to reach some conclusions as to the widespreadness of the familial defect. We cite a few of such families. The spectacular literature on feeble-mindedness concerns itself with the royal families of the feeble-minded, with the Jukes, the Kallikaks, the Nams, the Tribe of Ishmael, etc. These well-known studies seem to indicate that the collaterals of the widest range, as well as the immediate families themselves, are feeble-minded or defective, that an enormous amount of crime of the lower kind exists among such groups, that they are immensely prolific, that they threaten to swamp civilization. The specter of these families hangs over all the legislation which asks for the preventive measure of sterilization. Our family group studies of this type were undertaken to see whether or not we could find any such groups as the Nams, Jukes, Kallikaks, etc.; whether or not our Waverley families were so immensely prolific, and so fatally linked up with crime and widespreading feeble-mindedness.

REFERENCES (*Chapter I*)

1. Bernstein, Dr. Charles: "Advantages of Colony Care of Mental Defectives." Psychiatric Quarterly, 1927.
   "How Small Town Industry Makes Use of the Moron." Indust. Psych. Monthly, Vol. II, No. 6.
2. Binet, Alfred and Simon: "Development of Intelligence in Children," pp. 266–267. Publications of the Training School at Vineland, 1916.
3. Bleuler, Eugen: Textbook of Psychiatry, p. 601, 1924. The Macmillan Company, 1924.
4. Brigham, Carl C.: "A Study of American Intelligence." Princeton University Press, 210 p., Princeton, New Jersey, 1923.
5. Davenport, C.: "Heredity in Relation to Eugenics, 1911." Henry Holt & Co., New York.
6. Davies, Stanley P.: "Social Control of the Feeble-minded." The National Committee for Mental Hygiene, New York, 1923.
7. Fernald, Walter E.: After-care Study of the Patients Discharged from Waverley for a Period of 25 Years. Ungraded, 1919, 5.

8. Goddard, H. H.: "Human Efficiency and Levels of Intelligence." Princeton University Press, 1920.
9. Healy and Bronner: "Delinquents and Criminals. Their Making and Unmaking." Macmillan, p. 150.
10. Myerson, Abraham: "Inheritance of Mental Diseases." Williams & Wilkins Company, 1925, Baltimore.
11. Myerson, Abraham, and Hexter, M. B.: "13.77 versus 12.05. A Study in Probable Error." Mental Hygiene, 1924.
12. Pearson, Karl: "On the Continuity of Mental Defect." 47 p., Dulau & Company, London, 1914.
13. Porteous, S. D.: "A New Definition of Feeble-Mindedness." Training School Bulletin, 1921, 18.7–10.
14. Pressy, Sidney L. and Luella C.: "Further Data with Regard to Sex Difficulties". Journal of Applied Psychology, 1925, 5, 78–84.
15. Terman, L. M.: "The Binet Scale and the Diagnosis of Feeble-mindedness." Journal of Criminal Law and Criminology, 1916. Vol. 7; pp. 530–543.
"Intelligence Tests in Colleges and Universities." School and Society, 1921, 13, 481–494.
"The Mental Test as a Psychological Method." Psychological Review, 1924, 31, 93–117.
16. Vaihinger, H.: "The Philosophy of 'As If.'" P. xliii. New York, Harcourt, Brace & Company, 1925.
17. Wallace, George F.: "Are the Feeble-minded Criminals?" Mental Hygiene, 1929, 13, 93.
18. Wallin, J. E.: "Studies of Mental Deficiency and Handicaps." Miami University Bulletin, No. 5, 1924, pp. 110 and 111.
"The Education of Handicapped Children." Boston, 1924, p. 266 and following.
19. Wells, F. L.: "Mental Tests in Clinical Practice." Chicago, World Book Company, 1927.

Chapter II

GENERAL REMARKS ABOUT HEREDITARY CHARACTERS

In the literature of medicine and of eugenics many pathologic states and characters are listed as neuropathic and are regarded as having bearing on the problem of the inheritance of mental diseases, feeble-mindedness and epilepsy. In a previous work*

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* "Inheritance of Mental Diseases." Myerson.

I discuss these characters at length and demonstrate — to my own satisfaction at least — that most of them are not to be regarded as having any bearing, so far as can be demonstrated, on the inheritance of the mental diseases. The "all cats look grey in the dark"* theory adequately explains the origin of what has been called the "polymorphic theory of heredity." A few words concerning this theory may be relevant:

"These are the cardinal points in the theory as elaborated by many writers and tacitly accepted by the majority of psychiatrists, biologists and eugenists even today.

"There is a unitary something in the neuropathic or psychopathic inheritance which makes itself manifest under many forms (thus the polymorphism). All manner of mental diseases, including the organic diseases, are thus labelled, and all psychoneuroses, including as well epilepsy, feeble-mindedness and crime. Up to this day this doctrine prevails in France, in England, and to a limited extent in Germany where attention to the details of mental diseases has side-tracked polymorphism, and in America where under a new guise, as Mendelism, it has been given the sanction of the foremost writers until very lately. In the excessive development given this theory headache in an ancestor was given a hereditary value in relation to the mental disease of his descendant. Even headache and fainting spells in a cousin had a dread significance, while the earlier writers laid great emphasis on tuberculosis, cancer, hemiplegia, gout, "rheumatism" and every chronic or semi-chronic human ailment. At the present day practically every mental hospital history in America wastes good paper by including data on these diseases in relation to the ancestors and relatives of patients.

"Lombroso[8] and his pupil, Nordau[10], gave to the term degeneracy the widest significance, so that on the one side of human development the lowest human beings—cretins, idiots, etc., were linked together with the highest development, the men and women of genius. His 'reasoning' is typical of that of the whole polymorphic school and I cite a few examples of it, though I could multiply them indefinitely in the writings of Morel, Fere, Dejerine, Clouston, MacPherson and others who have subscribed to the theory.

"Lombroso based much of his theory on his ideas of the stigmata of degeneracy which are both physical and mental. Thus he gives as signs of degeneracy common to both genius and insanity, shortness *and* tallness, rickets (which includes, God save the mark, rachitic, *lame, hunch-back,* or clubfooted, thus linking together at least a hundred diverse things under one heading), pallor and emaciation (which as every one knows are secondary to other conditions), stammering, left-handedness, delayed development, precocity, etc., up to a 'fondness for certain words!' And this passed for science, and was part of the work of an extraordinary personage. It never occurred, apparently, to Lombroso that all these stigmata are very common and found almost as frequently among the 'normal' as among the insane or the geniuses. He finds it rather sinister that a list of geniuses were weak and sickly in childhood, such personages as Demosthenes, Bacon, Descartes, Newton, etc. It would surely be a blessing if more people were then weak and sickly in childhood, if, alas, mediocrity did not also follow childhood diseases."

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* The prevailing fallacy up to recent years of considering those cases of feeble-mindedness hereditary in which insanity or other mental diseases occurred in the preceding generation is well exemplified by the statement of the great Seguin[12] when he says:

"It (referring to feeble-mindedness) is considered hereditary when there have been cases of feeble-mindedness or insanity in the preceding generation."

This basic defect of overgeneralization also is behind the report of the Massachusetts Commission in 1848, in which it attributed 22% of these cases to heredity. It also vitiates the work of the British Royal Commission[2].

In this paper we will ignore the occurrence of certain conditions in the ancestors and relatives of the feeble-minded as having no proved bearing on the problem of inheritance and, therefore, it will be wise to discuss a few of these conditions.

ALCOHOLISM OF ANCESTORS

Alcohol and alcoholism, *per se,* do not in our belief have any bearing on the origin of feeble-mindedness *in so far as our present knowledge goes.* The alcoholic may be feeble-minded and the feeble-minded may be alcoholic, but there is no necessary relationship between the two conditions either of a neuropathic or a genetic kind; that is, alcohol is neither a hereditary factor nor a causative factor. Studies of the alcoholics in the jails do not convince one that there is any great degree of feeble-mindedness among them. The elaborate and significant study carried on by Elderton and Pearson* is a comparison of the children of the alcoholic and the non-alcoholic of a Scotch city. Their conclusions are:

1. The mean weight and height of the children of sober parents is very slightly greater (when mathematically corrected) than those of the alcoholic.
2. The general health of the children of alcoholic parents appears on the whole slightly better than the health of the children of sober parents. There are fewer delicate children and in a most marked way fewer cases of tuberculosis and epilepsy!
3. Parental alcoholism is not the source of mental defect in offspring.

4. "To sum up then, no marked relationship exists between the intelligence, physique or disease of offspring and parental alcoholism in any of the categories investigated. It is needless to say that we do not attribute this to the alcohol but to certain physical and possible mental characters which appear to be associated with the tendency to alcohol."

While one need not accept all of the conclusions reached by the authors of this study, the facts themselves certainly make a relationship between alcoholism and feeble-mindedness unproved.* Fundamentally alcoholism is of social origin, and its main disastrous effects are more social, perhaps, than physiological or biological. The actual physical damage suffered by the alcoholic has been greatly exaggerated and racial damage has not been proven. The alcoholic races, such as the peoples of northern Europe, have no more feeble-mindedness than the non-alcoholic races, such as, the Jews and the people of the Mediterranean coast.

ORGANIC BRAIN DISEASE OF ANCESTORS

In the etiology of feeble-mindedness the occurrence of shock, paralysis, etc., in the ancestors has in many studies been given an importance which it does not in the least deserve. The bulk of "shock" and "paralysis" is due to arteriosclerosis of the brain and is part of the arterial degeneration which takes place with middle and old age, although it occurs now and then in young individuals. However, all persons acquire cerebral arteriosclerosis if they live long enough, and, in a sense, the greater incidence of shock and paralysis in the ancestors of a group is evidence for the longevity of that group rather than a mark of degeneration. This is quite adequately borne out by the statistics of Diem[3], Jolly[7] and others, and in fact whatever data we have on the matter shows that organic brain disease, as such, occurs more frequently in the ancestors of the normal than in the ancestors of the insane and feeble-minded.

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* Many of the medical writers have firmly and even passionately insisted that alcoholism is a source of racial damage of fundamental importance. Their whole attitude is that of the propagandist rather than that of the scientist; of the prohibitionist rather than that of the biologist. Bertholet[1], Horsley[6], Forel[4], Saleeby[11] write of this drug with an obvious moral tone which to some degree impairs their conclusions. In fact the whole emphasis laid upon alcohol and syphilis as sources of racial injury, of blastophoria (to use Forel's phrase) has a source in morals and to that degree does not properly belong in medicine and biology. For it does not appear that the forces which we like to personify as Nature have any regard whatever for our human conception of right and wrong, or any regard for our human values. (See discussion in my book, "Inheritance of Mental Diseases[9]" for more on this point).

For a dispassionate discussion of the whole subject of the relationship of alcoholism to feeble-mindedness and other psychopathic states, see the excellent book of Samuel J. Holmes[5], "The Trend of the Race." Holmes comes to no definite conclusion about the matter. It is obvious that some forms of alcoholism represent a mental disorder. A large part of alcoholism in my opinion, is a social, pharmacological reaction.

PECULIAR PERSONALITY OF ANCESTORS

Much stress is laid in the literature upon "peculiar personality." While it is true that peculiar personality is often enough a primary mark — so to speak — of mental disease, it is too widespread and too subjective an evaluation to be of importance in a family history. Peculiar personalities abound, and "all the world is queer but thee and me, and thee is sometimes queer" aptly expresses the general irrelevance of this summing up by one person of another. The intellectuals mock the lowbrows and the lowbrows poke fun at the intellectuals; business men tend to consider artists as odd and one has only to listen to the conversation of artists to appreciate the fact that they regard all the rest of the world and most of their fellow artists as queer. And there are not wanting those unregenerate who smilingly insinuate that the learned psychiatrists themselves are the queerest of the queer!

OTHER "NEUROPATHIC" TRAITS OF ANCESTORS

I need not go into detail about the relevance which such diseases as migraine, chorea, etc., have upon the etiology of feeble-mindedness. A recent study of migraine definitely indicates that there is no more "neuropathy" in the ancestors of the migraineous and in their descendants than there is in the ancestors and descendants of what we call the normal. Migraine is turning out to be a disease of physical-chemical basis and constitutes a problem in itself. In our study, therefore, we consider only the incidence of such conditions as feeble-mindedness, certain of the mental diseases, and epilepsy as factors to be considered and weighed in their hereditary bearing on feeble-mindedness.

REFERENCES (*Chapter II*)

1. BERTHOLET, E.: Ueber Atrophie der Hoden bei Chronischen Alkolismus. Zentralb. f. Allg. Path. u. Path. Anat., xx, 43, 1909.
2. BRITISH ROYAL COMMISSION: Abstract of the Report of the Royal Commission on the Care and Control of the Feeble-minded, 1909, p. 4.
3. DIEM, O.: Die psychoneurotische erbliche Belastung der Geistesgesunden und der Geisteskranken. Arch. f. Rass. u. Gesellsch. Biol., 2, 89, 1905.
4. FOREL, A.: Alkohol und Keimzellen, Munch. med. Wochenschr., 58, 2596, 2605, 1911.
5. HOLMES, SAMUEL J.: "The Trend of the Race." Harcourt, Brace Co., 1921, pp. 269–295.

6. **Horsely**, V. and **Sturge**, M. D.: "Alcohol and the Human Body." Macmillan Company, London, 1907, 5th edition, 1915.
7. **Jolly, Phillip**: Uber Hereditat bei Geistesgesunden und Geisteskranken. Med. Klin., vol. 9, p. 364, 1913.
8. **Lombroso**, C.: "Men of Genius." Walter Scott, London, 1891.
9. **Myerson, Abraham**: "Inheritance of Mental Diseases." Williams and Wilkins Company, Baltimore, 1925.
10. **Nordau, Max**: "Degeneration." Appleton & Company, 1895.
11. **Saleeby**, C. W.: "The Eugenic Prospect." Dodd, Meade & Company, 1921.
12. **Seguin, Edward**: "Idiocy and Its Treatment by the Physiological Method." William Wood and Company, New York, 1866.

Chapter III

THE SPORADIC CRETIN

This study concerns twenty-five cretins of the so-called sporadic type, sixteen of whom were studied at the school at Waverley and nine in my private practice. It is thus seen that sporadic cretinism is relatively a rare condition and has, perhaps, been given undue importance in feeble-mindedness. Nevertheless, it is an exceedingly interesting condition and in the older days occupied a central position in the concept of feeble-mindedness and psychopathia in general.

The sporadic cretin is usually very short, ranging in adult life from about thirty to sixty inches. In some degree the height reached depends upon the efficacy and the early initiation of treatment. The body form of the cretin is characteristic: he tends to have a head large in size for his height and this head size is but slightly less than that of the ordinary individual. The neck is short and thick; the shoulders tend to be relatively broad, and the arms heavy and short. The lower limbs are short with heavy nates, rather thick thighs, and slender and weak calves. The facies of the cretin is characteristic: He has coarse, sparse hair with a rough, dry skin, a short wide nose of which the bone (according to an observation made first by us) is almost entirely cartilage and, therefore, extremely flexible. The tongue tends to be large, and frequently is lolling out of the mouth; the hands are short, spade-like, and clumsy. The secondary sexual characters appear, perhaps, somewhat later than normal, but do not seem to be deficient. Indeed the breasts in the female and the penis of the male often are rather large in relation to the size and weight of the individual.

The mental development of the cretin rarely reaches the moronic level, though it may under efficient treatment. Despite the fact that there is some traditional belief among the physicians in attendance on the feeble-minded that the cretin has a peculiar psychology, I am unable to discover any great difference from other feeble-minded, any unified emotional or social character among the cretins. Some are irritable and others are placid; some are stubborn and resistive, others are humble and docile; some showed excessive fear reactions while being studied, others took the examination as a pleasant experience and co-operated quite well. In other words, in their own crude way their psychological reactions ran the gamut of the normal psychological reactions.

There is a voluminous literature on the causation, etc., of cretinism. There is now no need to review this literature. It has gradually developed that the immediate cause of cretinism is a deficiency in thyroid gland secretion due to some unknown underlying cause. I refer the reader to the list of authors at the end of this article, and for a study of the earlier history of this condition especially to Wagner von Jauregg[3] and to the study of Kowitz. Among the later writers Nobel and Rosenbluth, Benedict[1] and Talbot[10], Moro[5] have importance and weight. The deficiency in the thyroid gland secretion fundamentally creates a lowered metabolic rate, and it is this lowered metabolic rate which is looked upon as the basic pathology of cretinism.

One may mention the opinion of Moro[5] who adopts the point of view that cretinism is a *neotenic* character. By *neotenia* is meant a persistence of the youthful conditions and characters into adult life, and he regards as neotenic characters in the cretins the persistence of the milk teeth, the delayed fontanelle closing, the delay in bony development, the non-closure of the epiphyseal junctions, etc. Apparently he regards excessive action of thymus, in its turn due to the atrophy of the thyroid, as the essential pathology. Finkbeiner[2] believes cretinism to be a sign of degeneration and regards the thyroid disease as only an evidence of this degeneration. Back of this thyroid degeneration, he points out, is a lack of the inflow of new elements from racial admixture, a stagnation of racial qualities.

A critical examination of these theories is not necessary. The cretin resembles the infant only by a caricature of some infantile characters, and one can find as many resemblances to senility. The Finkbeiner theory does not deny the rôle of the thyroid but merely finds its cause in a hypothetical stagnation of racial characters. Throughout the literature on feeble-mindedness, especially in the works of the earlier writers, one finds a constant tendency towards an atavistic explanation, to characterize feeble-mindedness as a reversion to primitive mentality. But primitive peoples did not lack thyroid however crude in appearance they may have been.

A good deal of work has been done on the brain condition in cretinism; one finds it cited by Wagner von Jauregg[3], Scholz[8], Quervain[7], Mott[6], and others. Whatever has been found is not essentially characteristic since it occurs in other states and presents the picture of a general and diffuse involvement of brain substance with loss and alteration of pigment of the nerve cells (chromatolysis), infiltrations and adhesions of the meninges, reduction of brain volume and general asymmetry of hemispheres.

The blood picture in cretinism has received some attention. I mention only the writings of Theodore Kocher[4] and Margaret Schonberger[9]. Their results are contradictory; our own studies indicate that where there is change in the blood picture it is in the direction of a mild secondary anemia, such as is common among all relatively inactive people. I may state briefly that the studies of Ullian* on our cases show biochemically anomalous sugar tolerance curves — that is, sugar curves which did not correspond to the normal but which took no specific direction, there being in some cases increased sugar tolerance and in other cases diminished tolerance. We are unable to account for the picture. The CO_2 combining power of the plasma was somewhat diminished. All other biochemical studies made were negative, including the coagulation time and the sinking time of the corpuscles. Since syphilis is traditionally suspected as the etiological factor of all obscure pathologic conditions the blood and spinal fluid of our patients were examined and were negative in every case to the Wassermann reaction.

Thus it will be seen that to classify cretinism as feeble-mindedness is really an emphasis on but one symptom. Fundamentally it is feeble-thyroidness and symptomatically it is just as much feeble-bodiness as feeble-mindedness. The cretin shows in his entire structure, as well as in his mental reactions, his disorder and deficiency.

THE HEREDITY OF SPORADIC CRETINISM

We studied this group very intensively, especially in view of the polymorphic theory which places cretinism at the end of the four stages of degeneracy. We placed special emphasis on the occurrence of thyroid disease of any type in the ancestors and siblings of our patients. (a) In one case there were two siblings, a brother and sister, who had cretinism. The brothers and sisters of these two, numbering seven, showed no evidence of thyroid disease nor was there any evidence of thyroid disease in the ancestors nor in the first cousins. H. Zoepffel[11] states that the occurrence of two sporadic cretins in one family is very rare in Germany. While our survey of the literature has not been exhaustive, it seems to be rare everywhere and when it occurs outside of the cretinous zone it is probably coincidental. (b) In one of our families there occurred thyroid disease in half brothers and sister, apparently due to paternal influence. In this family the father and mother separated after the birth of our patient; each remarried and had families. The maternal half brothers and sisters were normal. Of the four paternal half brothers and sisters two had goiter without, however, either cretinism or hyperthyroidism. (c) The Lahey clinic of Boston writes us that cretinism does not occur amongst the relatives, ancestors or descendants of patients with hyperthyroidism and goiter. (d) Amongst the eighty-two siblings of these cretins (fifty-three being the siblings of the sixteen Waverley patients and twenty-nine being siblings of my own personal cases), there occurred no no case of feeble-mindedness, nor was there any associated cretinism. *Therefore, feeble-mindedness of other types does not seem to be associated in any biological way with the feeble-mindedness of cretinism so far as siblings are concerned.*

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* These will be cited in a separately published paper by Dr. Ullian.

Nor did we discover in the history or by the examination of the parents any evidence of feeble-mindedness. Most of the people of this group belong to the lower cultural class, as is naturally the case of the relatives of the patients of a state hospital. Many of the parents were immigrants and illiterate. All that one can state is that there was nothing in their lives, in their adjustment of society, to indicate a pathologically low mentality. They corresponded, on the whole, to the normal poor people.

As to mental disease, the father of one cretin had general paresis, a definite syphilitic infection of the brain, the hereditary implications of which I have discussed elsewhere* and which, so far as can be proved, has little or no hereditary bearing.

One cousin of the two or three hundred cousins is reported as having a mental disease of unknown type, characterized in a general way so as to resemble the disease known as dementia praecox. The personal family studies emanating from the

Taunton State Hospital and elsewhere* disclosed no cretin as the direct descendants of cases of dementia praecox. It is therefore unlikely to the point of the impossible that this case bears on the inheritance of cretinism.

There were two feeble-minded in the collaterals, one first cousin and one second cousin. Since there were, on a reasonable assumption, at least two hundred of such relatives in this group, the occurrence of feeble-mindedness in two collaterals cannot be held to be of importance. There was plenty of tuberculosis, pneumonia, organic brain disease, etc., in the relatives of these cretins, likewise there was much discord in their families. These factors cannot be evaluated. It is very unlikely that tuberculosis (to select one condition), which is one of the great common diseases, occurs more frequently in the case of the ancestors or relatives of the cretin than it does in the case of the ancestors or relatives of the normal, except in so far as tuberculosis is a disease mainly ravaging the poor and those living under poor hygienic conditions. And in regard to family difficulties, there does not seem to be any increase of cretinism parallel with the rising divorce rate, else the higher cultural group would have children who were all cretins.

Thus it may directly be stated that cretinism has no hereditary relationship, first, to other forms of thyroid disease, although this statement must be somewhat cautiously made in view of the case with a cretin brother and sister and the case with thyroid disease among the half brothers; second, it has no relationship to other forms of feeble-mindedness; third, it has no hereditary relationship to mental disease in general. It is, so to speak, a congenital or early acquired thyroid disease, sporadic in fact as in name, depending upon some pathological state arising in utero or early in extra-uterine life. It is impossible for us as yet to study intra-uterine conditions; very likely these vary sufficiently from pregnancy to pregnancy to account for many things not at present understood.

REFERENCES (*Chapter III*)

1. Benedict, F. G., and Talbot, F. B.: "Metabolism and Growth from Birth to Puberty." Carnegie Institute, Washington, D. C., 1921.
2. Finkbeiner, Ernst: "New Views on Cretinism." Klinische Wochenschrift, Berlin; 3 : 517–520, (Mar. 25, 1924.)
3. Jauregg, Wagner Von: Uber Erbliche Belastung. Weiner Klin. Wochenschr., 88, 1902.

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* See A. Myerson, "Inheritance of Mental Diseases."

4. Kocher, Theodore: Arch. f. klin. Chirurg., 1912, S. 280; and also Mitt. a. d. Grenzgeb. d. Med. u. Chirurg., 29, 1916.
5. Moro E.: Monatschr. f. Kinderheilkunde, Leipzig, 25, 1–1923. *481.*
6. Mott, F. W.: "Nature and Nurture," p. 24—"Causes of Mental Deficiency." Paul Hoeber, New York, 1915.
7. Quervain, Fritz: "Cretinism, Hypothyroid States and Nervous System"—Schweiz. Arch. f. Neur. und Psych., xiv; 1; p. 3—1924.
8. Scholz, A.: Klinische und Anatomische des Cretinismus. Berlin, 1906. August Hirschwald.
9. Schonberger, Margaret: Blutbefunde bein Kindlichen Myxödem. Zeits. f. Kinderheilkunde, 38: 1924, page 688.
10. Talbot, Fritz B.: "Studies in Growth; Growth of the Untreated Mongolian Idiot." Am. J. Dis. Child., 28 : 152–157, August, 1924.
11. Zoepffel, H.: Familiares Kongenitales Myxödem. Zeits. f. Kinderheilkunde, 36: 1923; page 287.

Chapter IV

STUDY OF MONGOLIANS

The Mongolian, or Kalmuc, idiot, is an exceedingly characteristic pathological specimen, diagnosable at first glance by the short stature, the slanty eyes, the flat occipital region and the "strawberry tongue." The general body of the Mongolian idiot is much more delicate than that of the cretin; the neck tends to be more slender and the torso is not so pudgy nor so powerful; the legs are short, rather slender, and the nates are not over developed; the arms are usually poorly developed; the hair presents no particular peculiarities; the skin is usually smooth and often fissured around the nose and mouth because of the frequent nasal and laryngeal infections. The nose of the Mongolian is usually quite bony as contrasted with that of the cretin. Very commonly the little finger of the hand and the small toe of the foot present a peculiar convexity and shortness. The adult Mongolian rarely reaches a height of over four and one-half feet, and is usually even shorter. However, there are Mongolian idiots who reach a height of five feet though these are rare.

The mentality of the Mongolian is somewhat understated by the term idiot since the majority of those in our series belong to the imbecile group. Very rarely does a Mongolian reach the moron level. In other words, the feeble-mentality is accompanied by a very decidedly feeble and somewhat grotesque body structure. The term *Mongolian* is a gross libel on a great division of the human race, since the only resemblance to the true Mongolian is in the slanty eyes. The Mongolian idiot does not have high cheek bones, coarse black hair, is extremely short, which the Mongolian is not, and in no essential has the physical or mental development of a race of mankind which on several occasions has conquered most of the world, has a historic civilization, and is by no means an inferior division of the human race. Thus the term "Mongolian idiot" is an error in its two parts: the patients are neither Mongolian nor are they necessarily idiots.

There have been many theories advanced to account for the genesis of the Mongolian idiot. These range from the fantastical ones, that the patient represents a sort of atavistic cropping out of Mongolian blood in otherwise white races, a theory based on the superficial resemblance to the Mongolians and without the slightest proof whatever. Another theory, about as credible, is that the Mongolian idiot corresponds to the orang-outang among apes, that living dwarf breeds are related to the negro race, and the Hottentot races have the Mongolian traits of wide flat intro-ocular fields and poorly developed super-orbital ridges.*

A "fact" often advanced as of etiological moment in the causation of Mongolian idiocy is frequent pregnancies with the patient as the last of the series of children in the families, or a birth rate of somewhat more than five children to the family. Of course thirty-seven cases are not enough to draw any conclusions as to birth rate; on the face of it this birth rate is somewhat higher than that of the general community, though within the range of probable error. (a) Of these cases seven only were the last of the series. (b) In four families the patient was the first child born. (c) In the other cases the patient was in the middle of the series, sometimes towards the end, sometimes towards the first born of the group. (d) At any rate such an etiological factor would not account for those of our cases in which the patient was the first born or the only child of relatively young mothers. Taking into account the small number of cases, there is no especial evidence to show that either the number of pregnancies or the order in the series of pregnancies has anything to do with the genesis of Mongolian idiocy.

Walter Timme[7], who contributes to this volume, writing on the Mongolian idiot states that:† "Studying Mongolian idiots at the Waverley School (also our cases), in most cases we found changes in the skull. This change consisted in an excavation under the anterior clinoid processes, and presumably under the oblivary process and optic groove, and the excavation communicated directly with the anterior portion of the fossa itself." On the basis of this finding, which Dr. Timme declares is found in other conditions besides the Mongolian idiots, he advises the hypodermatic injection of anterior lobe extract combined with whole gland feeding and thyroid administration in small doses. In those cases in which I have tried this treatment I have obtained no clinical results.

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* See in this connection the work of Sir Arthur Keith[4] and Mr. Crookshank[8].

† This is cited from his work, "The Mongolian Idiot[7], a Preliminary Note on the Sella Turcica Findings."

All efforts to influence the condition of the Mongol by thyroid have failed. Although the Mongol is by a superficial study often mistaken for a cretin there is no fundamental resemblance between these two conditions.

Vas[9] postulates an adrenal insufficiency in Mongolian idiocy, and bases this on low blood pressure, Sargent's white line sign, *i.e.*, a persistence of a white line after stroking the skin, and slow coagulation time. Ullian and I studied the Mongolian idiots at the school at Waverley and were unable to corroborate any of Vas' findings. The blood pressure was not particularly low considering the size of the individual studied; the vasomotor reaction was normal and the coagulation time studied by the slide method was within normal limits.

Van der Scheer[8] states: "Some anomaly in the mucous membrane is responsible for some anomaly in the amnion of which Mongoloidism state is the result."

Armstrong's[1] observation is: "The ultimate cause of Mongolism is unknown. The question is: Is Mongolism present in the unfertilized ovum or is it acquired after fertilization?" He states that of twins only one is usually a Mongol and the other is not.

Wile[10] states: "There is no evidence of direct inheritance although the total pattern of Mongolism suggests reversion to some earlier type."

There is, however, some rather slender evidence that the condition is of germ plasm origin; the most important being that identical twins have been Mongolians. Mitchell[5] and Downing[5] state: "There have been twenty-four instances of Mongolism reported in one or both twins. In fifteen of these the condition was present in only one of the children, the other and normal twin being of the opposite sex in eleven cases, the sex not being stated in the remaining four. *In three cases Mongolism occurred in both twins, the sex being identical.* In six cases Mongolism occurred in one of the twins of the same sex, in four of which there were two placentas present at birth, in the other two the condition of the placentas was not stated. These facts are in favor of the theory of Mongolism being a germ plasm defect and are against any theory which holds that causes operative during pregnancy are at fault. In no case has it been demonstrated that Mongolism can occur in only one of twins, the result of a single-ovum pregnancy."

Brousseau[2] and Brainerd[2] have recently written an elaborate monograph on Mongolism. The reader is referred to this volume, which was printed after this section of this article was written, for a complete account of the literature and a discussion of the various theories. Fundamentally the authors conclude, as I have done, that there is no known cause of Mongolism, that it does not occur in any direct relationship to the order of birth or to the age of the mother. The physical characteristics of the Mongol are well illustrated in this volume and the whole book is a careful and clear account of the condition.

Whether or not a germ plasm defect causes Mongolism, it can be very definitely stated that some pathological mechanism is at work which operates early and regularly, since Mongolism occurs in all of the white races, at least, as well as amongst negroes,* and Mongols resemble each other more closely than do brothers and sisters. The striking uniformity of the picture presented by the Mongols argues quite conclusively for a definite etiologic factor operating before birth, and it is very likely that it is independent of the conditions of pregnancy.

HEREDITY OF THE MONGOLS

(a) Of the one hundred fifty-seven siblings of our thirty-seven patients there was not one other case of Mongolism in the family. One Mongol had a twin who died shortly after birth. (b) Further, there was only one other case of feeble-mindedness, which is an extremely good record for thirty-seven families comprising one hundred fifty-seven other individuals. In other words, the evidence is that the Mongolian form of feeble-mindedness is utterly unrelated biologically to all other forms of feeble-mindedness and is consequently to be declared a problem in itself. (c) Moreover, so far as our histories went, there was very little mental disease in the relatives of the group. One patient had a maternal aunt with manic depressive psychosis and two deaf and dumb cousins. In one case there was a maternal uncle who had "been declared to be epileptic." The brother of one Mongolian idiot had a brain injury at birth and was epileptic. That the two cases of manic depressive psychosis had anything to do with the Mongolism of their niece and nephew cannot be advanced with any seriousness, since the study of manic depressives made at the Taunton Hospital and in the world literature revealed no case of Mongolism among the descendants. In other words, the occurrence of these two cases is unquestionably coincidence. (d) In fact, the total mental picture presented by the families of the Mongolian idiots is good, much better than that presented by most so-called normal families, for it is surprising how much psychopathology is rather evenly distributed throughout the population. (See articles of Koller, Diem, Jolly, cited in "Inheritance of Mental Diseases," and W. Boven.) Thus while we must include Mongolian idiocy as possibly a germ plasm disease, it is important to note that it has no known hereditary implications, that it seems to rise *de novo. It is on that basis that I am led to conceive of it as a sporadic injury of the germ plasm rather than as an inherited quality.*

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* Maxwell G. Schlapp[6] cites cases of negro Mongols. It would be interesting to discover whether or not the Chinese had Mongols. If a case of Mongolian idiocy were found among the Chinese this would paradoxically knock out the whole term *Mongolian idiocy*.

REFERENCES (*Chapter IV*)

1. Armstrong, H.: "Mongolian," British Medical Journal, p. 1106–7, June 30, 1928.
2. Brousseau, Kate, and Brainerd, H. G.: "Mongolism," Williams and Wilkins Company, Baltimore, 1928.
3. Crookshank, F. G.: "The Mongol in Our Midst." A Review in the Jour. of Heredity. Vol. XVI, 1925, American Genetic Association, Wash., D. C. (Book published by E. P. Dutton & Company, N. Y., 1924.)
4. Keith, Sir Arthur: "The Evolution of Human Races in the Light of the Hormone Theory." Bulletin of the Johns Hopkins Hospital, Vol. XXXIII, No. 376, 1922.
5. Mitchell, A. G., and Downing: "Mongolian Idiocy in Twins." Am. Jour. M. Sc. *172:* 866–872, December, 1926.
6. Schlapp, Maxwell G.: "Mongolism a Chemical Phenomenon." Journal of Heredity, 1925, Vol. XVI, p. 161–170.
7. Timme, Walter: "The Mongolian Idiot, a Preliminary Note on the Sella Turcica Findings." Arch. f. Neur. und Psych. 6 : 342, 2 : 240.
8. Van der Scheer, W. M.: "Etiology of Mongoloid Malformation; Importance of Uterus in Etiology of this Affection" — abstracted, J. A. M. A., *87* : 800, September 4, 1926.

9. Vas, J.: "Pathogenesis and Treatment of Mongolian Idiocy." Jahrb. f. Kinderh., *111* : 51–62, December, 1925; ab. J. A. M. A., *86* : 589, February 20, 1926.
10. Wile, I. S., and Orgel, S. Z.: "Mongolian," Med. Jour. and Record, 127 : 431–34, April 18, 1928.

Chapter V

THE ORGANIC BRAIN DISEASE GROUP *

The organic brain disease group is not homogeneous but is made up of several groups if we discriminate according to etiology, or apparent etiology, since in all these cases the differentiation between one apparent cause and another is difficult.

In the first place, there is a group which occurs congenitally and without known cause — that is, without birth injury and without the known occurrence of an infectious disease early in life. To explain this so-called abiogenetic group (Gowers) it is assumed that part of the brain, especially the neopallium, has not evolved, thus leaving a kind of decerebration analogous in results to the type seen in animals after experimental extirpation of the neopallium, or of the basal ganglia, and which we see evolving in post-uterine life in Wilson's Disease, Huntington's Chorea, and other organic brain alterations.

The second group of importance is the birth-injury group. Here difficulties supervene since statistics on the subject of the results of birth injury seem to be very difficult to obtain, as we experienced when we attempted to look up the injury cases of the Boston Lying-In Hospital. However, there seems to be no doubt on the basis of experimental and pathological work done that birth injuries occur as the result of prolonged, dry and difficult labor with asphyxia and hemorrhage incident to overlong and difficult first-stage labor. Some of the group of cases arise through difficult or unskillful obstetrics intervention, as in the cases where high forceps are used for abnormal presentation, and especially where version is attempted and poorly achieved. That this is a source of injury which results in organic damage to the brain with gross symptoms is unquestioned; though its relative incidence is in doubt. It is also probable, according to the work of Sharpe, Finklestein and many others, that diffuse injury occurs in the so-called silent areas of the brain. Unfortunately the so-called silent areas are associated with mentality, as for example, the anterior part of the frontal lobes and, to a lesser extent, certain portions of the parietal and occipital lobes.

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* This term is used to include the *gross* organic brain cases, those with outstanding and unquestionable symptoms. That there are many cases with lesser or doubtful symptoms seems certain to me, but I am not concerned with these cases at this time.

There is a third group, resulting from infectious disease occurring in early childhood, or infancy, in which the typical history is that the individual seemed normal until certain things occurred. Perhaps the child walked and talked and seemed in every way normal; then a "fever" supervened; the child was stuporous, had a series of convulsions, following which development conspicuously lagged, and there was no complete resumption of normality. In other cases the history is less clear: A series of convulsions without other definite signs took place. In some of these cases we are perhaps dealing with organic epilepsy; in some cases no other convulsions ever occur but the child is from the time of the series of convulsions inferior in mentality.

Of the infectious diseases which we now link up quite definitely with alteration in mentality and general personality, encephalitis must be given first place. There is a voluminous literature showing that in adults recovery from encephalitis is always uncertain, and that gross anatomical changes take place especially marked by the involvement of the corpus striatum and related parts, creating the so-called lenticular syndrome — in lay terms, the shaking palsy. An impressive literature has sprung up in the last few years showing that serious mental changes follow encephalitis in children. The main mental changes are feeble-mindedness and personality alteration. In some of these cases a recovery from the feeble-minded state takes place slowly, thus differing from all other forms of feeble-mindedness; but in many cases no such recovery takes place and the individual remains mentally defective. This is one of the situations in which statistical analysis is almost unnecessary in that we have the highly important and "control" fact that without some organic pathological alteration feeble-mindedness does not occur, once the mentality is established at normal. Meningitis, which has the fortunate result that it usually destroys when full or almost full recovery does not take place, now and then contributes a lowered mentality as result of the brain changes which accompany it.

It is difficult on the basis of what might be called the finished product — that is, the individual who has for some years shown feeble-mindedness with gross neurological signs, to differentiate between these three groups of conditions, since in neurology it is not so much the *cause* as the *location* of the lesion which creates the symptoms. Thus any injury to the motor convolutions will create a spastic paralysis irrespective of whether the lesion be a new growth, a hemorrhage, thickened adherent meninges, a hemorrhage following a fracture, etc. So that we have to fall back on relatively simple and probably inaccurate factors in the history. The division of these organic cases into groups, therefore, must be taken as very provisional and as without real accuracy.

(1) *Organic Brain Disease without Known Cause:* There were thirty cases at the Walter E. Fernald School in 1924, when this part of the research was going on, in which there was no history of birth injury, or infectious disease, nor were there convulsions or infection occurring after a period of normality. These thirty cases showed a wide range of physical and mental defects with the motor states ranging from the choreiform type of movement to those presenting diplegia — that is, all four extremities paralyzed; from individuals who ranged in mental age from the lowest type of idiot, untidy, completely paralyzed, having to be cared for in every single detail of their lives and who merely existed, to persons who were alert, active, who helped around the ward despite their disabilities. One case was remarkable in that this patient took it upon himself to educate himself and had finally reached a mental age beyond the upper limits of the feeble-minded, so that had he presented at first what he finally reached in mental development he probably would not have been classed as feeble-minded.

Heredity of this Group: Of these cases two (a) are those of a brother and a sister. The family history otherwise is entirely normal, that is, the individuals of the elder generation belong to a family on a low-grade cultural and economic level, more or less illiterate since they are Italians from the poorer districts of Sicily, but whose lives present no anomalies and whose physique was good. I believe we can eliminate in these cases as having etiological bearing the fact that a cousin "was in the reformatory" or that the mother of a large family was "irritable and nervous" at times. If such factors are admitted as etiological then there are no normal people in the world. Even in the higher grade groups any woman may be nervous and irritable at times without any great biological significance being laid to her reactions. In this family, in other words, two siblings present similar anomalies of development. (b) In another case the girl patient has a second cousin, also in the institution, who presents, however, no injuries to the central nervous system with no paralysis, organic chorea, or convulsions. There are three brothers of the patient under consideration who are normal. We are, therefore, reluctant to admit as having any hereditary bearing the occurrence of a different type of feeble-mindedness in a second cousin. (c) A third patient has six brothers and sisters who are well, but one brother who has presented a similar condition to our patient. On the maternal side there was a deafness which ran through the family, apparently of the hereditary type. Another patient had an epileptic sister. (d) *There were in this group one hundred twenty other and normal siblings.*

In the parental history of these patients there is the history of (a) one mother who had repeated nervous breakdowns which, however, never resulted in her commitment to a State Hospital; (b) a father who was said to be of low-grade mentality and very likely feeble-minded. There are several instances of alcoholic fathers and alcoholic mothers.

Thus it appears among these spastic cases with no definite etiological background that in some cases similar conditions occur among the siblings — in this series two cases. No cases, however, occurred among the parents; undoubtedly because such individuals rarely marry or have children. If birth were possible to them one might get an incidence of descendants with similar states, which might correspond to Mendelian or other ratios. But this is idle speculation since the physical state of these individuals precludes copulation. All one can definitely state is that an explanatory hereditary tendency may be postulated; that possibly the germ plasm lacks the conditions for normal brain development. But intra-uterine conditions may produce this result without invocation of heredity at all. For myself, I think it wiser to invoke intra-uterine conditions, such as fetal encephalitis, as a cause rather than to fall back on heredity, *especially since we have many instances of encephalitis in post-uterine life which account for similar conditions.*

(2) *Birth Injury Group:* Of the Waverley organic brain cases, there were twenty-five cases in which the birth was especially difficult and which was followed immediately by evidence of paralysis. The history in these cases will arrange itself in various ways but the common ones are: (a) Child born asphyxiated, with convulsions and low vitality for a few days, following which paralysis and weakness were noted; (b) two—head badly crushed and child black when born; (c) feet presentation with very difficult labor, baby taken with instruments, had to be worked over two hours to produce breathing; (d) crossed position with asphyxia; high forceps and convulsions. (e) Of four of these twenty-five cases it was stated that the mother had Bright's Disease when she was pregnant. (f) One child had a large meningocele when born. (g) In one case of identical twins the first was born with great difficulty and shows a spastic condition; the other twin is normal, birth being easy (first child bore the brunt of the dilation of the uterus and the birth canal).

I here cite two cases* which I have followed from birth, in which the injury was undoubted. In both of these instances the family history is entirely negative; subsequent children have been well in both cases, the injured child being the first born. In the first case the child was extracted by high forceps, was cyanosed and it took over an hour for successful breathing to be established. Lumbar puncture done, showed bloody fluid and increased intracranial pressure. The head was extremely distorted, there being an extremely elongated caput. A series of convulsions took place immediately after birth. There was a definite weakness on the right side of the body. This side of the body did not move at all, whereas the other side could be induced to move by pin prick. After a few days the child seemed brighter and gradually improved, so that at the end of six months there was no evidence whatever of hemiplegia. Nevertheless at the age of three the child is unable to talk and cannot walk; it was a year and one-half before he held his head up and two years before he sat up, and is at the present time definitely feeble-minded. In another case (these are merely cited as representative first births with prolonged labor and high forceps), there was a considerable bruising of the child's face, the presentation having been a face presentation. It was noted shortly afterwards that the child was unable to move one side of his body and he developed at the age of two months right-sided Jacksonian convulsions (this of course resulting from a lesion of the opposite side of the brain). At the age of one year, the Jacksonian convulsions having persisted, it was decided an operation was worthwhile trying. Accordingly a trephine was done and a subdural hemorrhage was found. This was removed. Other surgical procedures were carried out. Since that time the child has not had any convulsions. At the age of two and one-half, however, he shows a hemiplegia of the right side; he is unable to walk, says only papa and mama, is at least one year behind his chronological age, and will undoubtedly remain feeble-minded.

Birth trauma as a cause of paralysis and mental deficiency first became definitely established in medicine with the work of J. W. Little[5]. Little[5] established the syndrome known by his name, which essentially is a spastic paralysis usually of all four extremities and due to an intracranial hemorrhage often in relationship to the meninges, although the site of the lesion varies. His work was followed by that of others who, in general, confirmed his statements. A very important contribution was made by Sarah McNutt[6] who gave the pathology a much more definite meningo-pathological basis. It is interesting to note that Sigmund Freud[3] wrote a notable monograph on this subject. Without citing in detail the large number of able writers who have contributed to this subject it can be stated that in Germany the work of Seitz[8], Ylpö[12], Phillip Schwartz[7], and Dollinger[1] are of especial importance, since their researches have been systematically carried on for a good many years. Seitz believes that intracranial damage to the foetus arises in the main from injury to the larger blood vessels. The prolongation of the birth, and especially the relationship in size between the oncoming head and the mother's pelvis, is all important. He goes into details as to the clinical symptoms and signs which indicate brain injury. Schwartz's systematic researches have been of first importance; he relates the brain injury to the difference in pressure between the contents of the uterus and the atmosphere, and describes subdural and pial hemorrhages, as well as hemorrhages of various sizes into the brain substance itself, to this difference in pressure. He describes needle-like areas of softening, which lie around the lateral ventricles. Hemorrhages take place not only in the brain but also in the buttocks, the abdominal regions and in the underlying organs. The body hemorrhages are easily remedied by nature; unfortunately the injuries to the brain tend to remain permanent. Ylpö discusses premature birth and shows that the more premature the child the greater the predilection to hemorrhage and brain softenings. Dollinger followed up a large number of cases following birth trauma. Ylpö found seven and four-tenths per cent idiots and imbeciles among three hundred premature children whom he followed for several years; Dollinger finds a higher percentage among the high-grade feeble-minded whom he studied. The clinical observation of these authors is detailed and describes those symptoms by which brain injuries are diagnosed early.

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* Dr. Bronson Crothers[2] who has paid a sharp and learned attention to birth trauma and the consequent nervous and mental injuries, has recently sent me a record of two very relevant and accurately followed cases of birth injury and feeble-mindedness. These cases occurred in normal families and no psychopathic or neuropathic trend can possibly be postulated in his cases.

In this country, Sharpe[9] has utilized the method of investigation which at the present time is becoming perhaps the most important in the clinical study of the brain, namely — the lumbar puncture method. I cite the statements first which he made in 1925, and the later more important clinical study published in 1926:

"In 1913, I became interested in the chronic condition of cerebral spastic paralysis and, in taking careful histories of a large series of patients at two of the orthopedic hospitals of New York City, and then by thorough neurologic examinations including the routine ophthalmoscopic and lumbar puncture tests, it was surprising to note that in a small percentage (12 plus per cent) of these patients there were evidences of an increased intracranial pressure of chronic cerebral oedema. Occasionally, in a very small number of the older patients, the X-ray disclosed evidences of convolutional markings of the inner table of the vault, due to its atrophy resulting from the prolonged increase of the intracranial pressure.

"The history of these chronic patients having the condition of cerebral spastic paralysis is rather instructive. During the past ten years, up to January, 1923, I have examined personally 5,192 children, and of this total number examined, 671 (12 plus per cent) have had an increased intracranial pressure as disclosed at lumbar puncture. The operative and post-mortem findings have revealed "wet" oedematous brains under varying degrees of increased pressure, and along the supracortical veins in the sulci was a whitish cloudy new-tissue formation, reported pathologically as being the organization-residue of a former layer of hemorrhage which had occurred most probably at the time of birth. Gross cerebral lesions of intra and subcortical hemorrhagic cysts, old cerebral lacerations, etc., were disclosed in only 6 plus per cent.

"The histories revealed the following data: 81 per cent first children; 72 per cent males; 95 per cent full-term babies; 90 per cent difficult labors; 76 per cent forceps used as last resort; 17 per cent breech deliveries; in 8 per cent pituitrin had been used.

"During the first week, the following observations had been made: 64 per cent more drowsy and stuporous than normally; 23 per cent refused to nurse; 78 per cent evincing a lessened normal demand for food; 39 per cent muscular twitchings, especially of orbital muscles and fingers; in 17 per cent general convulsive seizures occurred; in 18 per cent an icteroid appearance was present.

"Within two weeks after birth, 61 per cent were considered well and normal, if indeed anything abnormal had been suspected. Within one month after birth, 82 per cent were considered normal.

"Within the first year and usually around the seventh month after birth, 79 per cent of the children were not developing as they normally should, such as holding up the head and later beginning to sit up, and at this time, within the first year, the development of spasticity of varying degree and type was usually observed. Later the child did not walk or learn to talk within the usual time, and it was this development of a chronic condition in an apparently normal child that was most mysterious, to say the least, and its presence was ascribed to almost every possible cause. In this connection, I may state that the Wassermann test of the cerebrospinal fluid was positive in only one-half of one per cent."

Another paper by Sharpe is summarized as follows:

"1. Intracranial hemorrhage of varying degree occurs rather frequently, in 9 per cent of this series.

2. Its acute signs are often meager and may be apparently entirely absent, the more common signs being from drowsiness to stupor, from difficulty to refusal to nurse and from muscular twitches to general convulsive twitches.

3. First born, full-term males having difficult prolonged labors are more liable to this complication, forceps being used as a last resort rather than their early application; medium forceps and breech extraction.

4. Hemorrhagic disease of the new-born is not a common etiologic factor, at least in this series of cases, in which puncture was done and tests were made within from twenty-four to forty-eight hours after birth.

5. Lumbar puncture as an early diagnostic method when the hemorrhage is still in fluid form, and as a therapeutic means of spinal and cranial drainage, is a simple and safe procedure in the absence of severe shock."

Ylpö makes the important point that the smaller and more premature the child the more liable to hemorrhage its blood diapedesis; especially is this true if the membranes have ruptured prematurely. With the membranes intact the pressure of the intra-uterine forces is equalized throughout the body. When the membranes are broken the pressure is irregularly distributed and especially focuses on the head, so that there occurs hemorrhage from the blood vessels inside and outside of the head.*

Of the twenty-five cases of organic brain injury apparently following child-birth, the hereditary background is with difficulty ascertained, since the family histories are in many instances vague, and it was difficult to obtain information concerning many of these patients. Of the positive pathological statements made concerning the families: (*a*) There is in the records one case of a brother who is feeble-minded. (*b*) In another instance the father is declared to be insane and the mother hysterical, without further details. (*c*) In another instance the father was brutal and a drug habitué. (*d*) An interesting case is the one in which the patient was the first of a pair of twins, the second twin being well. (*e*) As far as the records show there were sixty-eight siblings with, on the whole, no more than the expected amount of feeble-mindedness.

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* F. R. Ford[2] gives a full and valuable account of the literature on birth injuries, especially in relation to the creation of paralysis, hydrocephalis and epilepsy. He states briefly that such mental defectiveness as is found as a result of brain injury at birth is usually associated with obvious organic disease. Among the important authors whom he cites, and who have not been cited in my article are Putnam and Cushing, Dandy and his co-authors, B. Sachs, B. Crothers, G. Wilson, Fraser, Dott, Adolph Meyer, and others. Most of the writings on this subject concede the relationship of the gross paralyses and associated mental defectiveness with birth injury, especially in the form of hemorrhage. Few of the authors, however, have concerned themselves with the relation of feeble-mindedness with the paralytic signs to birth injury.
See also the textbooks of Ireland[4], Tredgold[11] and Stoddard.

In the light of clinical experience there can be no reasonable doubt that brain injuries at birth or at any time may cause feeble-mindedness. The only question is the amount of feeble-mindedness thus caused. The brain is the main organ of the mind; this does not need proof, unless one is a theologian or a philosopher. Adults with fully developed minds become demented as the result of brain infection and brain injuries. Brain injury at birth seems to be very much more common than we had supposed it to be, since the occurrence of blood in the spinal fluid definitely indicates hemorrhage and hemorrhage is due to trauma if, as has been the case in Sharpe's work, the so-called hemorraghic diathesis can be ruled out.

A matter which needs considerable investigation is the question whether the modern woman is becoming less capable of delivering herself as compared with her predecessors. A result of the lessening size of families is that those children who are born have a more difficult birth, because as a general rule the most difficult birth is the first one, and the more frequent the incidence of births the easier, relatively speaking, the births. The children of the small family have, therefore, on the whole more trauma at birth than the children of the large family. The age of mothers at the time of their first child thus becomes of great social and biological importance.

ENCEPHALITIS AND BRAIN INFECTION

Among the organic, or spastic, group was a considerable number of patients of whom it was recorded either that they had been normal up to one or two years of age and that then an infection or a series of convulsions occurred, from which their backwardness and paralysis were dated; or else it was more vaguely noted that a series of convulsions occurred in very early post-uterine life, from which time the deficiency plus the organic brain symptoms and signs were noted. There were thirty such cases at the Waverley School, in addition to which we collected some cases from the records of the Boston Children's Hospital. We shall first discuss the cases at Waverley. The following are type cases:

(1) Birth normal, had been walking and talking, when at twenty months the child had a fever which lasted for two weeks,

during which time he was stuporous; from that time the feeble-mindedness and the paralysis date.

(2) At eighteen months this child had convulsions with "brain fever"; when fever ended he was paralyzed.

(3) At six months had a series of convulsions, following which the paralysis appeared.

(4) At one and one-half years had convulsions, fever and later the paralysis and the feeble-mindedness.

(5) At two and one-half years had a fever with delirium for three months, was left partly paralyzed.

Such histories appear with modifications in all of the thirty Waverley cases. (*a*) Of the one hundred four siblings in the thirty families there are three who are quite definitely feeble-minded, but all three of these occur in one family — that is, of twenty-nine families the patient is the only feeble-minded person. In one, he is one of three feeble-minded children. (*b*) Concerning the parents and collateral relatives: It is recorded in one case that the paternal uncle "is said to be feeble-minded." (*c*) Of one, the father died insane but at what age it is not stated, nor have we been able to discover what type of mental disease he had. (*d*) The father of one patient had a nervous breakdown from which he recovered. (*e*) The father of another was intemperate, abusive to wife and deserted his family. (*f*) The mother of another was at the Boston State Hospital, the diagnosis there being "psychosis with mental deficiency." (*g*) The father of another patient quarreling with his mother-in-law, broke her arm. (*h*) There is considerable physical illness, much matrimonial difficulty in the brothers and parents, the uncles and aunts of the patients. If one placed all these things into a statistical hopper and gave them the same set of meanings and values, one could easily disclose a strong hereditary taint in the case of these children, and prove thereby that an infection merely brought out a neuropathic taint. This has been extensively done in the past and is fundamentally erroneous. Matrimonial difficulty and general physical illness are altogether too common to be given specific hereditary value. Social delinquency cannot be placed in the same class with infectious diseases. *By extending the list of conditions which may be declared hereditary, one finally extinguishes all differences, comes down to the fact that man is mortal, has weaknesses and is sinful. A linking-up can thus be made between the vicissitudes and misfortunes of life and feeble-mindedness.* The important facts in this study of this group are, so far as heredity is concerned, *the relative absence of feeble-mindedness* in brothers and sisters, and the relatively few cases where definite feeble-mindedness occurred in the parents.

The clinical conclusion is that the important thing in the etiology of this type of feeble-mindedness is the infection or the cause of the convulsions, and that other matters are as yet fundamentally irrelevant.

We studied a series of cases of encephalitis from the records of the Boston Children's Hospital. It is only within recent years that encephalitis has become a diagnosible condition, and even yet the use of the lumbar puncture to establish a diagnosis is uncommon except in the highest grade medical institutions. I believe that we may assume that an individual who has been normal up to his second year and who has been evolving well, has learned to walk, talk and keep himself clean, and then becomes sick with an infection of the brain and from that time on is defective, that the infection created his deficiency; that the chief constitutional difficulty is the susceptibility to encephalitis, and that this susceptibility has nothing to do with neuropathic or psychopathic traits. There were eleven such cases obtained from the recent records of the Children's Hospital, a very small number indeed and one not susceptible of statistical analysis.* (*a*) At eleven years of age one of these children had encephalitis, ran a temperature for two weeks, and was in bed a month. Since the illness the child has fallen behind and is now essentially a high-grade moron, although up to that time he was fully equal mentally to his contemporaries. (*b*) In another instance the child at three had an infection during which he was sleepy, had fever, had paralysis of the right side of the face with right external strabismus. Her early development was normal; she walked at one year, talked at two. Following the infection the child's mentality became distinctly lowered; she commenced to have epileptic attacks. She had convulsive attacks for a short time; her I.Q. was 60 and she was unable to go to school. (*c*) Another patient was in the second grade at the age of six. At seven she had double vision, convulsions, temperature of 102, lost consciousness, was spastic on one side of the body. She is now in a special class and has been there for two years without making any progress. (*d*) Another child of this series walked at seventeen months, talked at two years, then in the course of pneumonia developed a paralysis of the right side of the body, which was diagnosed by a distinguished neurologist as an encephalitis following pneumonia, localized in the right cortex. Following the pneumonia, his mental development has been very slow, so that at the age of fifteen he has a mental age of ten. It is not to be understood that every case of encephalitis in childhood is followed by feeble-mindedness, epilepsy, or the like. We have thirteen cases from the Children's Hospital in which there was encephalitis and then either full or almost full mental recovery. *It does not seem to me that the negative cases tell us much, since it is quite probable that the mental deficiency following encephalitis is dependent upon the site of the lesions and their extent, just as it is true that a hemorrhage of small size in the brain will be recovered from whereas a larger one leaves permanent residuals. Because a slap in the face does not break one's jaw it would be curious to argue that a punch by the fist of Mr. Jack Dempsey would need other factors to bring about this disastrous result.**

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* But a statistical analysis is superfluous since we have the "control" of the great bulk of normal children.

REFERENCES (*Chapter V*)

1. Dollinger, A.: "Monographie aus d. ges. Gebiet der Neurologie u. Psych. 1921 H. 23/25.
2. Ford, F. R., and Crothers, Dr. Bronson: "Birth Injuries of Central Nervous System." Part I. "Cerebral Birth Injuries and Their Results," Williams and Wilkins Company, Baltimore, 1927.
3. Freud, Sigmund: "Die Infantile Cerebrallahmung." Spec. Path. u. Therap. Nothangel, Wien, 1897.
4. Ireland, W. W.: "Mental Affection of Children," 1898. 448 p. J. A. Churchill, London.
5. Little, J. W.: "On the Influence of the Abnormal Parturition, Difficult Labors, etc., upon the Mental and Physical Condition of the Child," Obst. Tr., 3:243, 1862.
6. McNutt, Sarah J.: "American Journal of Obst.," 1885, Vol. 18, p. 73.
7. Schwartz, Phillip: Zeitschr. f. Kinderheilk. 29 u. 31, 1921; and Zeitschr. f. d. ges. Neurol. u. Psychiatr., 1923.
8. Seitz, L.: Arch. f. Gynakol., 82, 528, 1907 — Zentralbl. f. Gynakol., 1912, S. 1.
9. Sharpe, William: "Observations in the Diagnosis and Treatment of Brain Injuries." Reprint from Northwest Medicine, July, 1924.
10. Stoddart, W. H.: "Mind and Its Disorders." 4th edition. London, 1908, H. K. Lewis, p. 405.

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* What has been stated about encephalitis apparently does not apply to epidemic cerebro-spinal meningitis. We followed seventeen cases which had been cared for at the Boston City Hospital, in which the diagnosis of epidemic cerebro-spinal meningitis was confirmed by physical examination, laboratory tests, etc. All of these children recovered perfectly, in the main, both physically and mentally. This is to be expected since the very serious cases of epidemic cerebro-spinal meningitis die, and in those who survive the lesion has been confined to the meninges, which are in no way concerned with mentality. The situation is entirely different in encephalitis in that the condition does not tend to be acute but tends to be chronic and involves the brain substance itself. The reason for the difference between epidemic cerebro-spinal meningitis and encephalitis, in so far as the fate of those children who get over the acute stages is concerned, is that epidemic cerebro-spinal meningitis is an acute condition involving a non-nervous part of the body, even though it is in definite relationship to the brain; whereas encephalitis tends to be chronic in its effect and course, and involves directly the central nervous system structure.

11. Tredgold, A. F.: "Mental Deficiency," p. 17; 22: 36; 37: 40: 42: 63: 65–68 (charts) 90. William Wood & Company, New York, 1908.

12. Ylpö, Professor Arvo: Zum Entstehungsmechanismus der Blutungen bei Fruhgeburten und Neugeborenen. Zeitschr. f. Kinderheilkunde, Vol. 38, 1924, page 32.

Chapter VI

MICROCEPHALICS AND HYDROCEPHALICS

The number of these two groups at the Waverley School for Feeble-minded is too small to lend itself to any detailed study as to heredity or to biological factors. There were eighteen microcephalics at the Walter E. Fernald School for Feeble-minded in 1925. Microcephalus is a condition of unknown origin, manifested usually by the extremely small size of the head, so that the average microcephalic at the Waverley School has a circumference of from twelve to fourteen inches, the ordinary normal range being from nineteen to twenty-two inches. The larger number showed definite signs of organic brain injury, such as paralysis and spasticity of varied types. The mentality of the microcephalics ranges from the lowest-grade idiot to the low-grade imbecile. With the exception of two families, the family history of these cases is fundamentally negative. These two families are really one in that they represent two groups of Italians: Two sisters who are microcephalic and a maternal niece who is microcephalic. This group will be given in some greater detail in the family study section.

In one family the mother of one patient was insane at the "change of life," was away for a year and then recovered. Since microcephalus is very unusual and mental disease at "change of life" is very common, it is very unlikely that the two conditions have any biological relationship.

In another family the patient's father's sister was stated to be mentally deficient since birth, but four brothers and sisters of the patient are normal.

In another family the patient had so small a head as to be almost anencephalic. The family history of this patient is exceedingly interesting. He had one brother anencephalic; six of his brothers and sisters died very young; one cousin is anencephalic; and still another has spina bifida, so that in this family history defective development of the central nervous system appears very frequently. There is thus a likelihood that certain types of microcephalus are hereditary. Since the microcephalic do not mate the hereditary character has no possibility of reproducing itself.

It may be stated that there appeared to be two groups of the microcephalics: One a group in which the individual is extremely defective, with a head almost destitute of a forehead and brain, and usually associated with extreme spasticity and paralysis; the other, a group which may be called the "small-all-over group" probably corresponding to some type of infantilism, in which the face and head are fairly symmetrical but are exceedingly small, and are in harmony with the general smallness of the entire physique. The adult height of this "small-all-over" type is rarely beyond four and one-half feet. Their mentality ranges higher than the true microcephalic. They have often a naïve prettiness and undoubtedly are of different etiology than the true microcephalic, although in the hospital classification they are ranged with them.

There are only nine hydrocephalics in the Waverley group. The origin of hydrocephalus is both developmental, according to Dandy[1], and infectious. In certain instances the canals connecting the ventricle with the subarachnoid space do not seem to have completely developed. Iu others, due to infection there has been blocking of these canals. Of the nine cases there are two families in which hydrocephalus, or a similar condition, occurred in another sibling. Convulsions occur quite frequently, as would be expected in this group, and there is very much evidence of organic brain disease in general.

Hydrocephalus is not necessarily associated with feeble-mindedness. In fact, there are individuals with hydrocephalus in mild degree who do extremely well and who are as bright at least as the average. Necessarily in the case of those in the institutes, the injury has been greater than to those who remain in the community. In other words, they represent the extreme types of hydrocephalus. It is impossible to judge how many of our cases were of developmental and how many of infectious origin.

Whatever the causes of hydrocephalus and microcephalus, they are not related to the rest of feeble-mindedness nor to the other mental states. They represent particular injuries or defects, in the case of microcephalus occurring very early in the life of the individual, possibly of germ plasm origin. Hydrocephalus appears on the whole to be an injury or defect after conception and is probably not of true germ plasm origin.

REFERENCES (*Chapter VI*)

1. Dandy, Walter: "Internal Hydrocephalus. *Journal American Medical Association,* lxi, 2216.

Chapter VII

SYPHILIS AND FEEBLE-MINDEDNESS

It has been generally accepted* that syphilis, in addition to its effects on the individual, is an agent in the creation of race deterioration. Its effect in bringing about miscarriage, abortion, and still-birth is so well established that it is an easy transition from the facts relating to these matters to the opinion that it is responsible for the damage which manifests itself in inferior and defective individuals. The existence of congenital syphilis is, of course, a matter concerning which there can be no possible controversy. The Wassermann reaction, the Hutchinsonian signs, and post-mortem examinations have for some time completely established the fact that individuals may be born who suffer from the transmission of syphilis by their parents to them.

From this to the opinion that syphilis also causes feeble-mindedness is a step which has been taken, and which appears almost unanimously in the earlier literature concerning feeble-mindedness. It has been accepted almost without question that, because a certain number of the inmates of hospitals for the feeble-minded have syphilitic parents, and because these feeble-minded individuals have positive Wassermanns and other manifestations of syphilis, that therefore, the syphilis is causative of the feeble-mindedness. This belief has been challenged recently by several writers. Thus, Haines[3], whose earlier writings indicated that he believed that syphilis and feeble-mindedness were associated on the basis of the study of an insufficient number of cases, in his later investigations states it as his opinion that syphilis does not cause feeble-mindedness, because in a study of reform schools he found no larger percentage of the defectives having a positive Wassermann than in the general population of the reform school.

Weiss[9] and Isgur[9], studying the mentally defectives in a New York institution, found only 2.7 per cent of positive Wassermanns in some 1,630 cases. This leads them to the belief that syphilis has not been proven as a cause of feeble-mindedness, and that the conclusion that it does has been uncritically accepted.

The Solomons[6], in their book, "Syphilis of the Innocent," say: "The relation of syphilis to feeble-mindedness presents a question that is not easily answered. It is obviously true that there are a certain number of congenital syphilitics who are feeble-minded because of destructive lesions or failure of development of the brain due to congenital syphilis. However, a congenital syphilitic may have a coexistent feeble-mindedness which is hereditary, that is due to the presence of feeble-mindedness in the family or caused by other conditions than syphilis."

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* See in this connection the textbooks of Tredgold, Stoddard, Ireland, and others. Amongst more recent writers Oscar J. Raeder[6] is quite emphatic as to this relationship and presents an interesting series of cases in which there is a graduation of mentality according to the order of birth. I can only say that Baeder's cases are carefully chosen and interesting but inconclusive.

The most comprehensive study of the subject has been made by Neil Dayton[2], acting as Director of Research in Feeble-mindedness for the Massachusetts Commission of Mental Diseases. In a series of papers he has made a thorough review of the literature, and an extensive and intensive study of the cases in the Massachusetts State School for the Feeble-minded at Wrentham, Massachusetts. He states[2], "A comparison between the incidence of congenital syphilis in mentally defectives and in non-defectives, shows only a slight margin of difference. In those mentally defective, congenital syphilis is present to the extent of 5.4 per cent. In those not defective, it is noted in 4.3 per cent of cases. The difference of 1.1 per cent is not one which would warrant a positive statement as to the importance of congenital syphilis as a cause of mental deficiency." (This difference can easily be explained, as will be shown in this paper, by the difference in social status of the mental defective and the non-mental defective.) Citing the statistics of a huge number of cases, he states, "From this study of the statistics it would appear that congenital syphilis is not of great importance as a causative factor in mental deficiency." Studying the congenital syphilitics at the Wrentham School, he states, "The accompanying table presents the summary of those cases in graphic form, and shows that in the Wrentham group the greater portion of the positive cases have other powerful contributing factors besides syphilis (heredity). In fact, only thirty of the sixty positive could be considered as resulting solely from syphilis. This method of approach reduces by fifty per cent the number of cases we have previously considered as caused by congenital syphilis. Only one conclusion is possible, and that is that syphilis is decidedly of less importance as an etiological factor in the production of mental deficiency than the statistics would indicate. Further, the presence of a positive Wassermann reaction in the feeble-minded is not conclusive proof that the mental defect was not caused by other factors than syphilis." The papers of Dayton are strongly recommended to those who would approach the subject in a thorough manner. It is by far the most important contribution on the subject of syphilis and feeble-mindedness that there is in the literature.

Another approach to this problem of syphilis as a cause of feeble-mindedness is to consider the fate of syphilitic children.

That is, to take the whole bulk and body of congenital syphilitics, and find out what proportion of the individuals are feeble-minded. Unfortunately, such studies have not been carried out in a comprehensive way up to the present time. The work of the Solomons does not indicate, according to their opinion, that syphilis produces feeble-mindedness in any great measure. (See their book, "Syphilis of the Innocent.")

David Lees, in a discussion of congenital or inherited syphilis, asserts that mental deficiency is not infrequent in congenital syphilitics, but gives no data on the subject. Carl Buster[1] gives 39 cases. Out of 14 of these, seven were considered imbeciles or idiotic, obviously an insufficient number and without any fundamental value.

Park J. White[10] and Veeder[7], in a study of 443 cases of hereditary syphilis says that 15.4 per cent showed mental retardation, but the number carefully studied is not stated, and the criteria of mental deficiency seem to have been rather vague. They state, "All grades of mental deficiency were counted, from idiocy to the higher grades described as backward in school, *difficult to get along with,* mental age several years behind chronological. The milder degrees of deficiency were far more common." There is no history of the parents given in these cases, and it is obvious that "difficult to get along with" may mean anything at all, and is not necessarily feeble-minded.

Many other papers appear in the literature, but they are not satisfactory because the number of cases is usually very small, and the groups are often selected out of classes of the population which might show feeble-mindedness irrespective of syphilis.

The pathological anatomy, post-mortem, of children with congenital syphilis and presenting mental defect, has not been made by Ranke, Kretschmer[4], Weil[8], and Wohwill[11]. Ranke's cases are entirely those of children who have died within a very short period of time after birth, or else cases in various developmental stages of intra-uterine life. Here he found the usual neurosyphilitic signs, which were to have been expected in children who apparently died of acute central nervous system syphilis. Development disturbances are also described by Ranke, but these do not seem to be in any way specific.

Weil[8] and Kretschmer[4] seem also to have confined their studies entirely to the very young infant or premature child dying of congenital syphilis. These cases are on the whole irrelevant so far as their bearing upon the problem of the relationship of syphilis to feeble-mindedness is concerned, because these children die as the result of an acute neurosyphilis, which it is obvious that the congenital syphilitic feeble-minded, so-called, do not have. The study of Frederick Wohlwill was more extensive than those previously cited. While he calls attention to what he calls developmental rests, the bulk of his paper is confined to the description of neurosyphilis of the ordinary type, with changes in the meninges, changes around the blood vessels, and changes in the parenchyma of the brain itself. *Developmental rests* so-called are held to be significant by this author, as indicating that syphilis, in addition to producing an inflammatory reaction, may also produce changes which interfere with the proper growth of the brain. The paper does not seem to me to be conclusive in this respect, because he has not made a control study of other infants dying early in life of other causes than syphilis. It is notorious that all types of changes occur in brains, which cannot at the present time be properly evaluated, and surely could not have been evaluated at the time that Wohlwill wrote. At that time, the newer stains for the study of neuroglia had not been developed. It does not seem to me that these and other papers of the same type on the pathological anatomy of congenital syphilitics dying early in life, and who had a fulminating neurosyphilis, throw any light at all upon the problem of the rôle of syphilis as merely hindering the growth of the brain. From our experience with adult syphilis, it seems more likely that syphilis acts on the *all or none principle* — either it produces inflammatory reactions of the brain and creates dementia, a mental disorder of a gross type, or else the brain is entirely spared. What causes the predilection of the spirocheta pallida for one brain, and allows another one to escape, we do not know at the present time, although speculation has concerned itself with the creation of a type of spirochete which attacks nervous tissue.

The Fifty-nine Waverley Cases

A factor of importance in the instance of syphilis in any group is the incidence of promiscuous sexual relationships. Among people of low cultural level, where prostitution is common, the incidence of syphilis is high; much higher than in those cultural groups where, though extra-marital relationships are obtained the prostitute is not the chief source of sexual relationship. By all accounts and by the most trustworthy statistics, the prostitute is the chief disseminator of syphilis. It thus becomes highly important to determine the type of family from which the syphilitic feeble-minded individual comes. If, for example, it can be shown in any such group that there is a much larger amount of feeble-mindedness in their families than would be expected, if at the same time promiscuous sexual relationships have obtained, then it becomes quite clear that the syphilis may have no relationship to the feeble-mindedness, but merely represents the amount of congenital syphilis to be expected in such a group. Furthermore, if it can be shown that neurosyphilis does not obtain to any great extent in the individuals in the hospital labelled "congenital syphilitic feeble-minded," the situation becomes quite clear that, on the whole, the feeble-mindedness is not related to the syphilis.

Family statistics of the fifty-nine cases called "congenital syphilitic feeble-minded" at the School for Feeble-minded at Waverley: Because data on these cases of an intensive kind was not easily reached and because there were a great many "unknown" among them, the study was conducted along relatively simple lines. In the first place, (*a*) an intensive physical examination was given each patient to determine the absence or presence of clinical signs of congenital syphilis and especially clinical signs of neurosyphilis. Lumbar punctures were done in those cases in which permission was obtained for such a study. Second, (*b*) a study of the families was made in order to determine the amount of feeble-mindedness among the siblings and the parents of the individual in the hospital. Third, a study was made of the sex life of the parents of the patient and also, whenever possible, of the individual himself in the hospital, because it is obvious that an individual may have a positive Wassermann reaction who has lived a promiscuous sex life before coming into the hospital.

(*a*) Clinical signs of congenital syphilis were found in 19 of the 59 patients designated as congenital syphilitics. We accepted as signs of congenital syphilis Hutchinsonian teeth, interstitial keratitis, nerve deafness, and signs of neurosyphilis, itself, such as immobility or marked irregularity of the pupil, changes in the reflexes, and changes in the spinal fluid. Of the 19 cases presenting evidence of congenital syphilis, the larger number (16) had negative spinal fluids. Three of our entire series had a positive spinal fluid. By a positive spinal fluid we mean a positive Wassermann, increased cell count and increased protein. Two of these three cases were definite cases of neurosyphilis, very much similar to adult neurosyphilis in appearance, and, in fact, representing the gradual occurrence of neurosyphilitic disease. The third had organic signs of neurosyphilis.

Of the other 40 individuals, i.e., those whom I say had no signs of congenital syphilis, there were many who had enlarged frontal bossed, or rather square head, or lymph glands in or around the elbow, but as will be shown later, among the individuals whom we group as the unclassified feeble-minded there are a large number also who had these signs, which indicate imperfect development; and which, as I have stated before, by no means indicate syphilis and, in fact, often enough are not found among the congenital syphilitics.

Three cases called congenital syphilis had organic brain signs, which I believe were not related to the syphilis. Of these three cases it was discovered that one had had meningitis when young; another came of a family in which difficult labor had occurred with each child, and this child was paralyzed right from the start of his life. He might have been included among the organic brain type of feeble-mindedness. The organic brain signs of the third were not traced to any known cause.

Of the 59 cases, five females had had a sex career before coming to the hospital. They were known to be promiscuous in their sexual relationships. One of them had borne illegitimate children. It is not at all improbable, in view of these facts and in view of the generally negative physical examinations in these cases, that these females were merely feeble-minded individuals who had acquired syphilis. It is noteworthy that none of the statistics dealing with feeble-mindedness and syphilis take into account the opportunities of the patient for *acquiring* syphilis.

Siblings of the feeble-minded syphilitics: (*a*) Of the 59 cases, the mental state of the siblings was unknown in 12 cases. This is not to be wondered at since in many cases these feeble-minded were illegitimate; in other cases they had been abandoned, were foundlings; and in still others they had come to the hospital and then their relatives disappeared from the scene. At any rate, the fact that in 12 cases the siblings were unknown does not load the statistics in favor of these families being of normal or high grade. The fact tends toward the other direction, namely — towards indicating that these were rather low-grade families. (*b*) In 15 cases there were one or more other feeble-minded siblings in the families of the Waverley patients. (*c*) In 26 cases the siblings were known as normal; (*d*) in six cases the feeble-minded patient was the only child. Thus, of the 41 cases in which it was possible for the stock to manifest itself in the creating of one or more feeble-minded siblings, there were 15 of such cases. Though the number 59 is a small one and statistical evaluation is on the whole difficult in so small a group, yet the extraordinarily large number of feeble-minded siblings cannot be without significance. If one contrasts these figures with the figures of the cretins, the Mongolians, and the spastics the difference at once becomes striking. In the case of the former groups the number of feeble-minded siblings is hardly more than one would expect. In the case of the so-called congenital syphilitic feeble-minded, the number of siblings who are feeble-minded is far greater than what one would expect.

This hereditary trend becomes at once strengthened by the study of the parents of the syphilitic feeble-minded. There were fifteen cases where the parents were unknown, which again does not load the statistics in favor of these parents being normal; but on the contrary, from what we know of social life, loads it in the other direction, namely — that they were abnormal, and probably low grade. In fourteen cases, there occurred definite feeble-mindedness among the parents of the syphilitic feeble-minded. In nineteen cases, the parents were definitely stated to be normal. In eleven cases, the parents were stated to be of low grade and feeble-mindedness was suspected. *Thus there occurred a tremendous amount of low-grade mentality and of feeble-minded mentality amongst the parents of this group of syphilitic feeble-minded.* Again, if one contrasts this with the familial situation of the cretins, the Mongolians, and the spastic or organic brain cases the difference is striking. In the former groups of cases there was very little parental feeble-mindedness. In this last group the amount is noteworthy. In other words, the number of feeble-minded to be expected from this group of people, *irrespective of any syphilis at all,* would be high if there is anything at all in the inheritance of feeble-mindedness. In fact, in the most of these cases if the Wassermann reaction had not appeared upon the scene as a method for discovering latent syphilis, syphilis would not have been expected and the onus of the feeble-mindedness would have been placed on heredity.

When we study the sex life of the parents of these syphilitic feeble-minded, the amount of promiscuity of sexual relationship at once explains the incidence of syphilis in this group. Of the 41 cases in which the sex life was determined, classified as to promiscuity and non-promiscuity, *fifteen cases of parental promiscuity were discovered.*

Several of these individuals were definitely known to be prostitutes; others had had illegitimate children; many had been arrested for sexual irregularities. We did not class under promiscuity those individuals whose sex life had merely been irregular; we only classed under this heading such lives in which the lack of sexual discrimination had been outstanding.

CONCLUSION

1. A survey of the literature shows that the incidence of syphilis among the inmates of institutions for the feeble-minded is slightly, if at all, greater than that of non-defective children.

2. Intensive study made of the inmates of the Walter E. Fernald School for the Feeble-minded shows that there are few signs of neurosyphilis among those labeled as congenital syph-

ilitic feeble-minded. In other words, direct evidence of the brain being involved is scanty.

3. A very large proportion of this group of feeble-minded come from families in which there is much feeble-mindedness; in other words, if there is a hereditary element in feeble-mindedness, it may be held responsible for a large proportion of the cases labeled congenital syphilitic feeble-minded.

4. The social stratum and the way of life of the parents of these feeble-minded would lead one logically to expect a large percentage of syphilis amongst their descendants, irrespective of the feeble-mindedness.

5. While it cannot be doubted that syphilis causes alterations of the brain, and thus produces *dementia* both in the adult and in the child, there is no proof at present that syphilis causes *feeble-mindedness.* There is nothing in the general appearance and the general reactions of the congenital syphilitic feeble-minded to distinguish them from the mass of the feeble-minded. Therefore, there is ground for the assertion that, at the present time, we can safely state that syphilis of ancestors causes little, if any, feeble-mindedness in descendants.

REFERENCES (*Chapter VII*)

1. Buster, Carl: Das Schicksahl Congenital Syphilitischer Kinder, Archives. f. Kinder. 1921, 69, 319.
2. Dayton, Neil: "Congenital Syphilis as Causative Factor in Mental Deficiency; Analysis of Cases." Boston Medical and Surgical Journal. *193:* 671–673, October 8, 1925.
   "Congenital Syphilis as Cause of Mental Deficiency: Statistics." Boston Medical and Surgical Journal. 193 : 668–671, October 8, 1925.
   "Syphilis in Etiology of Mental Deficiency-Mental Hygiene." *9* : 760–771, October, 1925.
   "Degree of Mental Deficiency Resulting from Congenital Syphilis." Journal American Medical Association. *87*:- 907–908, September 18, 1926.
3. Haines, T. H., and Portlaw, W. P.: "Syphilis and Feeble-mindedness in Alabama State Industrial Schools." Ohio Medical Journal, July, 1920.
4. Kretschmer, E.: Korperbau und Charakter. Berlin, 1921. J. Springer. 195 p.
5. Raeder, Oscar J.: "Feeblemindedness in Hereditary Neuro-Syphilis." Reprinted from American Journal of Diseases of Children, March, 1921, vol. 21, pp. 240–246.
6. Solomon, H. C. and Maida: "Syphilis of the Innocent." U. S. Interdepartmental Social Hygiene Board, Washington, 1922.

7. Veeder, B. S.: "Feeble-mindedness in Infants and Children; Mentally Defective Infant and Child." — Medical Clinics N. America, *9*: 56–67, July, 1925.
8. Weil, B.: Grosshirn Befunde bei Hereditar-Syphilitscher Sänglingen. Jahrb. f. Kinderheilkunde; 68 — 1908, 444.
9. Weiss, M., and Isgur, L.: "Syphilis as Factor in Etiology of Mental Deficiency." Journal American Medical Association. 82 : 12–14, January 5, 1924.
10. White, Park J.: "American Journal of Syphilis." Vol. 6, 1922, p. 353.
11. Wohlwill, F.: Pathologisch-Anatomische Untersuchungen Am Zentralnervensystem Klinisch Nervengesunder Syphilitiker mit Einschluss der kindenitalen Syphilis. Arch. f. Psych., 59 : 733, 1918.

Chapter VIII

THE UNCLASSIFIED GROUP OF THE FEEBLE-MINDED

In turning our attention to the unclassified group, it is necessary to point out that this is a very heterogeneous group of individuals, whose only basis of unity is the unity of our ignorance as to their pathology and etiology. The statistics of this group will be dealt with by Dr. Elkind in a following section of this paper. Without, then, going into anything approaching a statistical analysis in exactness, certain points of importance may be indicated.

1. Physical Findings of the Unclassified Group

Of some 535 of this group closely studied, there were 24 individuals so far below the average height that the term "dwarf" could be legitimately applied to them, for example, adult males who ranged under 4 feet 8 inches in height and adult females who ranged under 4 feet 4 inches in height. There were 17 individuals who were blind, 8 individuals who were deaf, 21 persons who showed the less obvious signs of organic brain disease, such as difference in reflexes, organic pupillary signs, etc., but who could not be further classified or linked up with any known cause or infection. There were 125 persons whose general physique presented so many signs of inferiority as to be classed as "general inferior individuals." This term needs a little amplification. We did not include many things that are ordinarily marked as inferiority, and have so been classified by most writers, as, for example, very poor posture, very bad teeth, strabismus, etc. We excluded strabismus because we did not know what its incidence in the general population is. We excluded poor posture because that is merely often a reflex of the mental state itself. Very few really feeble-minded individuals have good posture. The slouchy let-down that comes with a lowered mentality is very conspicuous, but it can be imitated by any one with a mimetic sense. By "general inferiority" we meant those individuals who are small in size, who showed bony and other deformities, who are markedly asymmetrical in origin, who would be conspicuous, in a word, anywhere, by the actual physical defect manifested in their skeletal and head asymmetry and their inferior size.

Thirty-three individuals had marked vasomotor disturbance, as manifested by cyanosed hands and feet. There were 44 persons who had marked cranial deformity, not approaching the true acercephalus, or tower head, and excluding, of course, the microcephalics and the hydrocephalics. It will thus be seen that physical inferiority is a very conspicuous accompaniment of feeble-mindedness of our institutional group.

2. Incidence of Convulsions and Relation of Degree of Feeble-mindedness in the Unclassified Group

We studied the incidence of convulsions among these patients, and attempted to discover whether there is any relationship between the incidence of convulsions and the general mental level of these patients. It is, of course, true that a good many children who have normal mentalities have had convulsions in infancy. Therefore, whatever statement we make concerning the incidence of convulsions relates of course to our group, and does not apply to the rest of the feeble-minded or to the normal population. I divided our feeble-minded into three groups, those of the lowest level up to the age of three or to a corresponding I. Q., those of a middle level up to a mental age of six or a corresponding I. Q., and those of a mental age of six upward, with very few ranging above nine. I believe that this is a better classification than the common one of idiots, imbeciles, and morons. First of all, it is a more convenient one, and second, it is more logical. Why give three different Greek names to different degrees of feeble-mindedness?

The following rable indicates the results:

	Convulsions		*No Convulsions*	*Total*
	Expected Number	Actual Number		
Lowest level	24.8	49	84	133
Middle level	40	35	178	213
Highest level	35	16	173	189

It will be seen by the table that the actual incidence of convulsions in the lower grades was about twice as much as was to be expected; in the middle grades it was about what was to be expected; and in the highest grades was less than one-half of what was to be expected. In other words, it is safe to say that at least amongst this sample, the incidence of convulsions had a relationship to the degree of mental deficiency. It is not assumed that this is a causative relationship. If one included the hydrocephalics, the microcephalics, and the organic brain types of feeble-mindedness, the incidence of convulsions would be much increased, and increased in favor of the lower mentalities. It is to be emphasized that these patients are not essentially what is to be classed as epileptics. In the most of instances, the convulsive states occur during infancy and early childhood, and then disappear or appear only at rare intervals. J. E. Middlemiss[4] states that although the causal relationship between epilepsy and dementia is comparatively negligible, the close association between the two conditions is of such universal recognition that it calls for further discussion. Epilepsy is more common amongst idiots than amongst morons. The convulsive fits of the aments are usually associated with convulsive fits early in the child's life. Mental arrests and paralysis of the limbs sometimes result from these fits. These convulsive disorders are not epilepsy, and are largely the physical expression of a subnormal cerebral development. It will thus be seen that Middlemiss's findings are very similar to our own.

3. General Physical Inferiority in the Unclassified Group

The relationships of these three types of mentality in the unclassified group was studied in relationship to the instance of bodily defect, excluding from this consideration the dwarfs, the blind, the deaf, the microcephalics, and the hydrocephalics, and considering only the relationship of general inferiority as previously defined. Our table also includes the relationship of what we call negative physical examination in relationship to these three degrees of mental state. By negative physical examination, we merely meant no outstanding physical defect. Poor feet, poor posture, and the like, if not associated with any other defect, were classified as negative. The following table shows the results:

	General Inferiority		*Negative*		*Total*
	Expected Number	Actual Number	Expected Number	Actual Number	
Lowest level	14	25	38	36	62
Middle level	36	44	96	95	152
Highest level	39	22	104	109	165
					379

It will be seen that general bodily inferiority amongst the lowest mentalities was nearly twice as high as expected, the amount in the middle grades was slightly more than expected, and in the highest mentalities, it was a little more than half as much as was expected. It is curious to note that the expected number of negatives in this group was closely approached by the actual number of negatives found. Thus, general inferiority in this group is very closely related to the degree of mentality. At the same time, the rather contradictory finding is that negative physical states appear equally among all three mental groups.

Potter, cited by Davies[2], states that the hereditary cases were under-developed physically, as well as retarded mentally, while the non-hereditary cases showed only a mental retardation. This is not our experience. We did not, unfortunately, make a statistical study of this point, but we have records of many cases with marked physical defect, some to the point of grotesque defectiveness, amongst the cases with negative family histories. Nor do we find that the hereditary cases belong to any special level of the feeble-minded. It is true that idiots do not beget idiots, because idiots do not propagate. They are shut off from propagation by the severity of their defects, and so are excluded from further damaging the race. But there are high-grade morons, low-grade morons, and imbeciles in our family cases. It is our impression, however, that the morons predominate in the hereditary cases.

An interesting confirmation of this observation on the physical defectiveness of the feeble-minded comes from M. W. Cliff[1]: "The results of our observations in the feeble-minded have yielded little on which to base a theory as to basic factors involved. There has been much theorizing in this particular field, and the author felt that he would not be criticized if he declined to draw other general conclusions. The constant association of structural development with mental defect and mental impairment is a condition so obvious as to argue a more or less common basis. Further than this, it is impossible to go at the present time.

"To summarize our findings in general terms, we would state that the Roentgen examination of the feeble-minded shows a very high percentage of malformation and developmental defect of the skull, and in those cases associated with endocrine disturbance, there are, as well, marked changes in the process of bone development, and that recognizable changes in the bony structures of the sella turcica are relatively uncommon even in those conditions in which the pituitary gland is involved."

Neil Dayton[3], in his excellent survey of 3,353 retarded school children in Massachusetts[3], states that groups with the lower intelligence quotient tend to be under average height and weight. Groups with the higher intelligence quotient, that is the higher morons, tend to approach the normal population in height and weight. He states, amongst other conclusions, that there is an apparent relationship between (1) height and intelligence, (2) weight and intelligence. The overheight and the over-average weight groups have relatively more patients in the higher intelligence levels than the under-average height and the under-average weight groups. And furthermore, in the lower levels of intelligence, there are more children under average in height and in weight. In a more comprehensive paper, entitled Survey of Retarded Children in the Public Schools of Massachusetts, Dayton states, "However, when we consider the physical deficiencies, we find a larger number than even the most pessimistic portion of the "legend" has ever outlined. Gastrointestinal defect, chiefly teeth and tonsils, easily take the lead." (It will be remembered that we have excluded gastrointestinal defect in our consideration of the defectiveness of the feeble-minded.) "The next in order of importance is stigmata. Just what stigmata may mean has always been more or less of a question, as their exact relationship with mental defect has not been satisfactorily outlined. Defects of special senses come next, and are followed by circulatory, neurological, and skeletal defects.

"In general, the physical defects outline themselves as follows:

4 out of 5 have defect of teeth or tonsils.
1 out of 2 shows stigmata.
1 out of 4 has defective vision or hearing.
1 out of 6 has a defective heart or defective circulation.
1 out of 7 has a neurologic defect or disease.
1 out of 7 has a skeletal defect."

When it is taken into account that in our personal studies we have excluded such defects as poor teeth, poor tonsils, the ordinary stigmata, such as defective ears, a defective palate, or a defective heart, which are tremendously common amongst our patients, then it becomes obvious that the amount of physical defect amongst the feeble-minded is appalling. On the whole, it may safely be stated as a general proposition, that the feeble-minded are feeble-bodied. When one takes into account the cretins, the mongols, and the organic brain diseases as well, then the picture becomes entirely organic and the bodily defectiveness is as conspicuous or more so than the mental defectiveness. But even in the unclassified, whose etiology is not definitely known, who present no extraordinary mark of bodily disease, the picture of general defectiveness is the correct picture of the situation. That is, while the mental defect and the physical defect do not run necessarily parallel, there is, nevertheless, a tremendous load of physical defect amongst the feeble-minded which makes it possible to state that the whole organism is probably defective. It is results like this which make it impossible to conceive of feeble-mindedness as a Mendelian character or even as an ordinary hereditary character of whatever type.*

THE RIDGE SCALP OR RUGA TYPE OF FEEBLE-MINDED

In passing, I wish to point out a group of individuals who, so far as I know, have never been described in the literature. Among the lowest group in mental development is a very small number of individuals with coarse features, fairly good-sized heads, and fairly well-developed bodies, whose scalps are ridged in a curious way, so that there is a striking resemblance to a washboard. This group is to be especially studied and later described in more detail. The physical anomaly of the ridged scalp, in so far as my observation goes, is not seen amongst people of normal mentality. There are seven cases of this type at the Waverley school, two of whom were brothers, the rest occurring in isolated instances of feeble-mindedness in a family group.

4. RELATIONSHIP OF FEEBLE-MINDEDNESS TO MENTAL DISEASE IN THE UNCLASSIFIED GROUP

Before the statistical analysis by Dr. Elkind was made, I had reached certain conclusions about the relationship of feeble-mindedness and mental disease. The problem fundamentally was this, — Are the mental diseases, if they occur in an ancestor, say a father or mother, biologically related to the occurrence of feeble-mindedness in a descendant. Dr. Elkind's figures will deal with this question more in detail than I intend to do. This, however, may be stated. Years ago, when I studied the inheritance of mental diseases, I was first led to the conclusion that Dementia Praecox was in some way related to feeble-mindedness. Further study led me away from this conclusion, and I stated that Dementia Praecox had no definite relationship to feeble-mindedness, except that there were groups of the so-called feeble-minded who probably represented what might be called congenital Dementia Praecox, an observation made by Kraepelin. Our present studies substantiate the belief that feeble-mindedness and the mental diseases, for it is an error to consider mental diseases as a unit, have nothing to do with one another in a hereditary way. It is very interesting to note that in those cases where we were able to get a definite record from a hospital as to the type of mental disease from which an alleged insane parent suffered, we found that a very large proportion of those labeled as insane were really feeble-minded. In other words, in many instances (17) in which the lay records stated that the individual was insane and had gone to a hospital for mental diseases, the institutional diagnosis was mental deficiency, in some instances associated with a psychosis, in other cases not associated with a psychosis. Fully a third of the institutional cases, that is those cases in which we obtained a record from institutions concerning the parents, turned out to be feeble-minded rather than insane. Though statisticians state that one is unjustified in making conclusions about the unknown, it is at least possible that amongst the other cases recorded as insane, there were also cases of feeble-mindedness. Further, when one divides up the known cases of mental diseases occurring among parents according to diagnoses received from state institutions, one finds a scattering incidence of alcoholic psychoses, manic depressive psychoses, dementia praecox, general paresis, and senile dementia. From my own studies, as detailed in the Inheritance of Mental Diseases, and from a study of the literature recording such data, it seems to me that there is not an undue amount of feeble-mindedness amongst their descendants, and a study made in the reverse direction, as in this case, of the feeble-minded for their insane ancestors, leads in a general way to the same conclusion, that, on the whole, there does not seem to be any biological relationship which has been established between the various mental diseases and feeble-mindedness.

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* Investigations made by A. A. Cunningham tend to show that mental superiority is in more or less direct proportion to the degree of physical superiority. It might be better stated that physical inferiority and mental inferiority are in close relationship to one another.

5. HEREDITARY FEEBLE-MINDEDNESS IN THE UNCLASSIFIED GROUP

This is discussed by Dr. Elkind, and I shall leave the facts and the figures to him. It is perfectly obvious that there is far more feeble-mindedness in the siblings and ancestors of our institutional cases than would be expected. There can, therefore, be no doubt that at least in the institutional feeble-minded, there is much familial feeble-mindedness; in other words, there is hereditary feeble-mindedness. Dayton[3] has made a comparison between the number of cases with inheritance of feeble-mindedness in the non-institutional group with our group. It will be seen by his figures that there is twice as much feeble-mindedness in the heredity of the institutional group as in the public school group. This, I think, is exactly what one would expect. The institution groups, like our own, represent a collection of the worst families, necessarily, because defective families are not so able to care for defective children as non-defective families, or at least as less defective families. In other words, our groups are loaded toward the hereditary side by the social circumstances, and the amount of hereditary defect found in our cases is not an index of the true situation in feeble-mindedness.*

REFERENCES (*Chapter VIII*)

1. Cliff, M. W.: "Roentgen-Ray Studies of Feeble-minded." Detroit. American Journal Roentgenol., 12 : 23–27, July, 1924.
2. Davies, Stanley P.: "Social Control of the Feeble-minded." 2d ed. Now in the hands of the publishers, Crowell Company.
3. Dayton, Neil: "Survey of Retarded Children in the Public Schools of Massachusetts." Journal of Psychiatry, March, 1928, Vol. 7, No. 5.
4. Middlemiss, J. E.: "An Analysis of 200 Cases of Mental Defect." Journal Mental Science, London, LXVI, 254–74, 1920.

Chapter IX

SOME SELECTED FAMILY GROUPS

These family groups have been selected from the hundreds available for detailed exposition for several reasons. Some represent what we call our "worst families." They are selected to show that even in these "worst families," collateral groups remain normal, and there does not seem to be anything like the widespread degeneracy, crime, etc., of the famous royal families of feeble-mindedness, the Nams, the Kallikaks, the Jukes, etc. In "The Inheritance of Mental Diseases," I have criticized, perhaps with undue severity, the type of studies represented by the Kallikak family[5] as non-representative of feeble-mindedness; and indeed I am extremely doubtful that they truly represent feeble-minded groups, for part of the picture is low cultural level, and the rest is due to an over-evaluation of normal intelligence which prevailed when these studies were made.

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* I cite other authors as to the incidence of hereditary feeble-mindedness in the non-institutional groups in the last section of this paper.

One family group is presented in which a fairly normal pair of parents gave rise to a family showing an extraordinary amount of feeble-mindedness, associated, in this case, with the rather remarkable phenomenon that all the children were breech births, that is, the normal position in utero was reversed, and the head born last instead of first. A few of many families are presented in which, without any known background or cause, one feeble-minded individual appears in a family tree otherwise normal. The pedigree of a "syphilitic" feeble-minded person is given as a type of the cases recorded in the previous chapter, to raise the question of syphilis versus familial feeble-mindedness. Some cases of familial organic disease are presented to round out what I believe is a far more typical picture of familial feeble-mindedness than most of the literature would lead one to believe.

Our family studies do not lead to the same extreme pessimism and fear for the race which permeates the classical family studies. Even our "worst" families have good collateral branches, and in most cases the main contribution of a family has been normal, even though one or more members have been low grade. In my opinion, there has been too much pointing with alarm, and too little sober investigating for the social understanding of the problem of feeble-mindedness. I cannot resist making the statement that the statistical necessities imposed by Mendelian ratios have not helped the situation at all.

In the Third Annual Report of the Eugenics Survey of Vermont[7], is a study which corroborates my point of view, that even amongst the bad families, decidedly better branches appear who offset in a measure, at least, the poorer groups. "What is most important socially as well as scientifically, a really high degree of excellence of character and achievement has been brought to light in both the "bad" and "better" branches of the family of these two defective people. The good branches of otherwise low-grade stocks are thus seen to be capable of making an important contribution morally, intellectually, economically, and socially to the same communities which are at heavy cost to support delinquent and deficient individuals from the same stock. The harm done by one group is thereby to a considerable degree offset by the benefits contributed by another of the same ancestral origin."*

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* (NOTE:) I have omitted the usual family charts. No one really studies them, and they have no value as art.

FAMILY I — THE LAND . . . . FAMILY:

This record concerns one of the "worst families." We have definite institutional records of two generations, with evidence of feeble-mindedness in three generations. The patient at Waverley is one of twelve brothers and sisters. His mental age is eight, and he is graded as a moron. He has two older sisters who were at the Wrentham State Hospital. One of these had three illegitimate children, who are at the Wrentham State Hospital. There is a brother who is of low-grade mentality; his exact mental status is unknown. He has never made a living for his family. He is married and has five children. The mother of these five children is of better mental type than her husband. One of the five children is definitely feeble-minded; two have been diagnosed as not deficient, and the other two as of "borderline" mentality. Another sister of our patient is at the Wrentham State School, and is a moron. A brother has done fairly well as a farmer, though of low-grade mentality, and has three children who are said to be normal. A brother is a patient at the Waverley School, and has a mental age of nine. Another patient has a record of minor delinquencies; his mental age is ten. A sister is a patient at the Belchertown State School for the Feeble-minded, and is a moron. One brother lives at home with his parents. He can do good work under supervision. He is honest, but is known as "simple-minded," and from all accounts is a moron.

The parents of this family of twelve people, practically all of whom are feeble-minded, are both of low-grade mentality. *The father* was born in Cape Cod, was never able to learn in school, and has never been able to make a living. It is suspected that he had incestuous relations with his children. The father has a brother and a sister. The brother has been a social problem. He married a normal woman. Of their three children, two are definitely considered of high grade; the third is not feeble-minded, but a delinquent. The father has a sister concerning whom little is known. She is described as being peculiar and unsocial, but not feeble-minded.

The mother is able to do simple housework under direction, and has served a sentence in the State Prison for Women for adultery. *She has three sisters, all of whom are of normal mentality. Twp have no children. The third went to high school, and has four living children, all of whom are of average mentality and do well in the community.*

The maternal grandfather and grandmother were born in Cape Cod. Nothing is known as to their actual mentality. They were self-supporting and got along well. From the standpoint of their career, they were not feeble-minded.

There are contradictory reports about the furthest ancestors of this group on the paternal side.

Nevertheless, it seems clearly established that the father and mother were of low-grade mentality and probably of the moron type; that they lived in very adverse social circumstances; and that the children were brought up in a home so bad in its influence that the Society for the Prevention of Cruelty to Children intervened. However, collateral branches of the family have done well, and even with the extreme involvement of all the members of the group, no really serious criminality occurred. There was none of the widespread degeneracy noted in the families which have been so conspicuous in the feeble-minded literature. It is also noteworthy that this whole family is of a high-grade moron level. This, I believe, characterizes those groups in which large numbers of a group are feeble-minded. *In other words, the nearer the approximation to normal, the wider-spread the involvement of a family group.* I believe that this has a bearing of theoretic and practical importance.

FAMILY II — THE ABB . . . FAMILY:

This family consists of three brothers, one of whom is at Waverley, one at the Belchertown School for Feeble-minded, and the third died at the Wrentham School for Feeble-minded. These three, who are typical feeble-minded of moron type, have a sister who is eleven years old, in the seventh grade in grammar school, and apparently above the feeble-minded level.

The father of this group was not feeble-minded, but when he was about seventeen years of age, he developed a psychosis which was diagnosed at the Worcester State Hospital as dementia praecox. He made a partial recovery and got married. His brothers and sisters are six in number. The oldest is an irresponsible woman of low mentality. Her husband is alcoholic. Of their seven children, all have been slow in school, are apparently just above the feeble-minded level, though on the whole they have been socially adequate. The second sister is apparently normal, married, has seven children, four of whom are normal. Two other sisters died of convulsions in infancy. The third, a brother, was poor in school, but has been socially adequate, married and has no children. The fourth sibling, a male, was backward in mentality and committed suicide. The fifth died at seven years of some infection. Two others died early in life.

The mother of this group was feeble-minded and was burned to death. She had one sister and three brothers. The sister is of average mentality, married and has two boys, one of whom is in college and the other works for a well-known printing concern. A brother, who, so far as we can find out, did not go very far in school, has three children, however, who are normal. Another brother was a teamster, alcoholic, had eight children, all of whom did well, are up to grade for their years, with one case of minor delinquency which was temporary. Another brother of the mother went to the eighth grade in grammar school, and has three normal children. *Thus the mother of our three feeble-minded patients presents the only defectiveness on her side.* The generation represented by the numerous children of her brothers and sisters have an excellent record, while three of her four children are feeble-minded.

The paternal grandfather, though of normal intelligence, was alcoholic. Toward the last five years of his life, he was in the Worcester State Hospital at various times with a psychosis declared to be due to arteriosclerosis and alcoholism, although certain aspects of the case resemble manic depressive psychosis.

The maternal grandparents seem, on the whole, to be normal.

When the entire family picture is surveyed, the third generation, except for the feeble-minded family itself, seems to be of average mentality and of average social adequacy. It can definitely be stated that feeble-mindedness is not appearing as a character of the rest of the group. It is too soon for one to say that mental disease will not appear. It is our opinion, however, that mental diseases have, on the whole, no hereditary relationship with feeble-mindedness. The feeble-minded branch was committed, a eugenical measure of great value. Delinquency of any major kind is entirely absent in this family group, and gross social inadequacy is absent. The minor delinquency present is of no fundamental consequence, and might easily be accounted for by other factors besides the feeble-mindedness.

FAMILY III — THE MAH . . . FAMILY:

This family group presentation centers around the question — congenital syphilis or heredity, which best accounts for the feeble-minded patient? The patient, whose Wassermann is positive and who is, therefore, called a congenital syphilitic, is an imbecile at the Waverley School. She is of Swedish descent and is one of seven children, four of whom are definitely normal and have normal children. Of the other three, one boy is a feeble-minded patient at the Wrentham School; the second, a girl, is a patient at the Waverley School; and the third is the patient who has the positive Wassermann. None of her brothers and sisters has a positive Wassermann.

The father and mother of this sibling group: The father is sixty-seven years of age, intelligent though fanatical about religion. He has three brothers. The eldest was alcoholic and had three feeble-minded children, two of whom are in Sweden, and one is a patient at the Massachusetts State Hospital at Westborough. The record from this institution declares her to be a low-grade imbecile. This brother had three other children, who are said to be normal mentally. One brother's whereabouts are unknown; another brother was alcoholic when a young man, married, and has ten children who are said to be well and very intelligent, are declared to be college men and women.

The mother, who died at fifty-four, was of good health and good mentality. She had four brothers and sisters, all of whom were normal with normal descendants.

The paternal grandparents are said to have normal mentality, but few details are given about them.

The maternal grandparents were Swedish, of normal mentality.

Thus, there seems to be nothing on the maternal side to account for the deficiency. On the paternal side, there are three first cousins who are mentally deficient. The rest of the cousins are normal. There seems to be no explanation of the appearance of feeble-mindedness in two of the third generation of this group. Certainly the positive Wassermann in the case of the patient at Waverley is very likely accidental and has no relationship to the feeble-mindedness. This family tree, we believe, is also more typical of feeble-mindedness than the continuous occurrence of feeble-mindedness in family groups.

Family IV — The MAC . . . and CAP . . . Family:

This is an account of the family mentioned previously, wherein there seems to be a hereditary microcephalic trend. The patient from whom this study starts is at the Waverley School for Feeble-minded. He was born with a very small head, was never able to walk, talk, or sit up, and the examination at Waverley shows that he has a typical microcephalic head, which is 12.4 inches in circumference. He has a mentality in the very lowest idiot groups, and is unable to walk, talk, or even to sit alone. He is one of three brothers. An older brother was at the Boston Children's Hospital. Their diagnosis is microcephalus and bilateral talipes equino varus. An x-ray taken April 4, 1924, shows a skull with an extremely small cranial vault with a marked prow-shaped occipital region. There is some suggestion of an anomaly of the second and third cervical vertebrae. The other brother, who is now one year old, has a very small head, with talipes equino varus. However, he is not at present diagnosible as a typical microcephalus, as he is able to sit up and has eight teeth at one year of age. It is impossible to say what his future development will be.

The father of these three children is an Italian, normal in health, normal mentally, and in physique is a typical sturdy member of his race.

The mother has syphilis, went as far as the seventh grade in grammar school, and is evidently of low average mentality. However, she is capable and does her best with her very difficult family. She is one of eight children, all of whom were well *except two sisters. These two are microcephalic cases. Both are at Waverley.* They presented the classical picture of microcephalus — small head, idiot, paralytic, and untrainable.

The paternal grandfather and grandmother present no unusual features in their history. There are a number of uncles and aunts on both sides of the family, with plenty of cousins on both sides, who are normal.

The maternal grandfather and grandmother, representing the first generation, present no unusual picture mentally or physically, except that the father was rather inclined to be lazy but good-natured and intelligent. The mother, who died of shock at about fifty, was a mid-wife, hard working, and with no apparent mental or physical defect.

Thus, microcephalus appears in two generations, involving two members of each family. There is some question of its relationship to syphilis, but whatever studies have been done in microcephalus do not prove that it is of syphilitic origin, although this question has been raised from time to time. Fortunately for the social welfare, the individuals who show the microcephalic trait in its well-evolved form never have children, although an ardent biologist might well regret this since the laws of its transmission might be cleared up if conjugation were possible.

Family V — The MEM . . . Family:

The following cases have presented familial blindness with feeble-mindedness, possibly due to syphilis, since each of these patients presented a picture which may be linked up with interstitial keratitis, which, as is well known, occurs in syphilis. They are of Armenian origin. The patient under consideration is nine years old, congenitally blind, hearing good, has automatic movements; the mental level cannot be ascertained because of lack of co-operation. He is undoubtedly an idiot. This patient had six brothers and sisters, one of whom is at the Perkins Institute for the Blind. The mental age of the last mentioned is above the feeble-minded level, but his conduct is extremely troublesome and represents defect in his unteachableness. A brother and sister died early in infancy, both of whom were blind. There are two half brothers, of the same mother and another father. One of these half brothers is at the Waverley School for Feeble-minded and is a blind idiot. The other, who is nine years old, is blind and dumb, though he seems to hear, and rates in the lower imbeciles.

The father of the first five children died of syphilis.

The mother is being treated for syphilis, is of average mentality, and is not blind. She married a second time. This man was the father of the last two blind children. Unfortunately, he also has syphilis, is well otherwise and of good mentality. The family history indicates no other cause for the blindness or the feeble-mindedness.

The paternal grandparents have a normal family history, and the father's brother and two sisters are normal.

The maternal grandparents by all accounts have been normal, and the mother has one brother and two sisters who are well, and there are three children descended from the brother who are normal.

Thus, there is the occurrence of a large amount of blindness and mental deficiency in one generation of a family. The only possible environmental etiology is syphilis. Of hereditary etiology, there is no hint in the family tree.

FAMILY VI — THE SOR . . . FAMILY:

The SOR . . . family, of Anglo-Saxon American stock, presents two cases of congenital organic disease in two siblings of an otherwise fairly normal family. One of the two patients is at the Waverley School for the Feeble-minded. He was born at full term, had normal delivery, weighed eight pounds at birth, was breast fed, and walked and talked at sixteen months. At eighteen months, he fell and struck his head, and was in a dazed condition. Three months later the patient cried a good deal as though in pain. He lost the use of his arms and then his legs became affected. He grew worse, until he could not sit up alone. When he was laid on his back, he cried. He was in the Massachusetts General Hospital and the Children's Hospital; Wassermann and spinal fluid were negative. There were no convulsions. When admitted to Waverley, he was very low grade mentally. He has, however, improved, has become tidy in his habits, can discriminate in taste and sound, and is interested in other children. He had convulsions during the year 1921; mentality, imbecile. He has a sister who is now, or was at the time of the examination, one and one-half years old, cannot sit up; had her first tooth at one year; legs are now rigid, turn in, and are thin in proportion to the trunk. She was normal up to one year, but is becoming like the patient at Waverley. She has been treated at the Children's Hospital; their diagnosis was spastic paraplegia with feeble-mindedness. These two children have five brothers and sisters. The eldest is thirteen at present, is being graduated from the junior high school, is a well-nourished, tall, well-built boy. The next is a girl, twelve years old, in the sixth grade. She is well and normal. The next is a girl, eight years old, in the second grade, who is well and active. The next, a girl six years old, is attending kindergarten, and is developing normally. The last is a boy, three years old, who is somewhat slow in talking, but is active and well.

The father of these children is a man of forty-nine, born in Canada, a carpenter, showing good average mentality and personality. He has two brothers and two sisters. One aunt is said to be nervous; the other is said to be well. The two uncles are well, and are laborers. The children of these uncles and aunts are well and normal.

The mother, born in Massachusetts, went as far as the first year of high school. She was twenty-nine years of age when the first patient was born. She is tall, robust and healthy, and presents no evidence of mental disease or feeble-mindedness. She had two brothers and two sisters. One of the brothers died in infancy; the other died of heart trouble. He had no children. The sisters are well, married, and the children of these sisters are well and normal.

The paternal grandfather is ninety years of age, is a blacksmith, is temperate and of good mentality. *The grandmother* died at fifty years of age. She was a school teacher. The cause of her death was cancer. Evidently her mentality was normal.

The maternal grandparents are living, are stated to be ignorant but well. The grandfather is a farmer, and the grandmother an adequate housewife.

The development of the spastic paraplegia with feeble-mindedness in these two patients cannot well be explained. Certainly there is nothing in their inheritance to account for it. Nor does any known environmental cause adequately explain the failure of development of the brain and cord. A biogenesis in the Gower's sense is the only explanation.

Family VII — The NICK . . . Family:

Of great interest is the NICK . . . family, of mixed American Anglo-Saxon and Irish-American type. The generation that is in hospitals, and of which three are at the Waverley School, number thirteen, the last three by a second husband of the mother. *The outstanding feature of these thirteen pregnancies is that all were breech births and difficult.* There were six deaths, three at birth, and two miscarriages. Of the surviving children, the following is the history:

First, a patient at Waverley, is a high-grade moron. He was finally paroled from Waverley, and is now working and doing well. The second is a patient at Waverley, a high-grade moron girl. The third is in the community but in a special class. He was examined at the Waverley School and rated definitely a moron. The fourth, a girl, is in the fourth grade in grammar school, is backward and a moron. The fifth, a boy, is lazy, does very poorly in his studies, is in a special class, and is undoubtedly a moron. There is one surviving child of the second marriage, who is also a breech-birth. He is only fifteen months old, but is not walking or talking, and shows marked backwardness.

So far as can be discovered by a study of the generations that preceded, there is no hereditary factor for the feeble-mindedness. *The father,* American born, died at forty-one. He graduated from grammar school, was a conductor on the railroad, and while he occasionally displayed a violent temper toward his numerous and difficult family of children, nothing indicates abnormal mentality. The brothers and sisters of the father, who number four, are well. One has three children who went through high school. Another has one daughter who is a saleslady. Another has a son who went to high school, and a daughter who went to Radcliffe College.

The mother went to the second year in high school, was very adaptable, respectable, and in no way abnormal. On her side, there were five brothers and sisters, all of whom are normal and intelligent. One of the sisters has three daughters who have graduated from high school. Another has three children who have done well in school and in industry. None of the cousins of the patient's family is in any way abnormal. In other words, here is a family group of whom all the siblings are defective; yet neither on the parental or collateral sides is there any evidence of defect.

The paternal grandparents present no unusual factors. The grandfather is still living, a seaman. The grandmother is also living, and is well.

The only factor of any importance is the remarkable incidence of breech births with difficult labor. Nevertheless, there is no evidence that any injury was inflicted on these children at birth. *That two normals shall produce all feeble-minded is unusual.*

FAMILY VIII — THE MUR . . . FAMILY:

This family is cited because there are present normal and defective children in one generation, without any very definite hereditary background (and with no definite cause for the feeble-mindedness). There are two patients at the Waverley School for Feeble-minded, two sisters. One was full term, normal delivery, was difficult to nourish, very slow in development, and is now a low-grade moron. The other sister, one of twins of whom the mate died, was small at birth, very backward in development, and is now a low-grade moron. There are five other brothers and sisters, four of whom are definitely normal, the normals being an older brother and sister and a younger brother and sister. One brother died at seven, was a patient at the New Hampshire State Hospital for Epileptics, but was definitely feeble-minded, so that it is very likely that so far as our studies are concerned, the feeble-mindedness is more important than the epilepsy. Thus, in this generation of eight children, three were feeble-minded, and five normal.

Concerning the father and mother of this group, there does not seem to be anything pathological. Both were born in Ireland, and had education enough to read and write. *The father* is a gardener, steady in his habits, having worked on the same estate for twenty-five years, is not very energetic, but is a man of good habits and not defective. He has two sisters, one of whom is single and a domestic. The other has one boy and three girls, who are well and normal.

The mother is characterized as an ignorant but hard-working woman, worn but not sickly, and able to handle a household well considering her limitations. She had eight brothers and sisters, all of whom are declared to be normal, on the basis of a long acquaintance, by the family physician. There are thirty-two descendants of these eight brothers and sisters, all of whom are well, with no cases of feeble-mindedness or epilepsy.

The history of the *paternal grandparents* is very meager. The grandfather and grandmother were farmers in Ireland, and died of old age.

The family tree of this group, except for one branch, would compare favorably with that of the average family in the community. There has been no delinquency, no alcoholism, and no pauperism. Yet, unaccountably, in one generation there appear three defective individuals, born of the same father and mother as five normal brothers and sisters. Such cases as the above can be multiplied many times in our records.

FAMILY IX — THE BACC . . . FAMILY:

I now cite a few families in which there was just one case of feeble-mindedness. The BACC... family is an Italian group. The patient at the Waverley School was the last of a family comprising five other brothers and sisters. He was of normal delivery, breast fed. When fifteen days old, he had whooping cough and pneumonia. He was very nervous and had jerky movements after his illness, described as chorea. At eighteen months, he had his neck glands lanced, and after that the spasms ceased. He is very backward, is unable to walk or talk; in other words, is an idiot of low grade. The oldest of his brothers and sisters went through grammar school, is married, and has three children, all of whom are normal. Another sister went through high school, and has a baby six months old, who is normal. Still another sister went through grammar school, and teaches in a trade school. A brother, unmarried, who went through high school, and two sisters, who died of measles at the age of four and two, are said to be normal. Another sister is at present in the third year of high school.

The father and mother of this family are Italian born, well educated, industrially self-sufficient, and provide a very good home for their children.

The father has a brother and a sister who are well educated. There are nine descendants of these two individuals, who have at least gone through grammar school, several have been in high school, and a few have had a college education.

On the maternal side, there are a brother and a sister, who are normal, and have what is described as "fine families," with some excellent musicians, and all with sufficient education.

FAMILY X — THE FASP . . . FAMILY:

The FASP... family is of Anglo-Saxon Scotch-Irish ancestry, and presents the sporadic occurrence of feeble-mindedness in an otherwise normal family. The patient is at the Waverley School for Feeble-minded, is the last of a long series of children. He was full term, normal delivery. Somewhere in infancy, he fell out of a carriage. Later, it is stated, the child became ill with meningitis, and after the illness "went back to infancy" in development. The mother and father were away in England at the time, and the details of the illness as it developed in the patient are vague. At any rate, the patient at the present time shows no definite signs of organic disease, but is definitely an imbecile. This patient has eleven adult brothers and sisters, so that a sufficient length of time has elapsed to discover whether or not other disease developed in this family. The eldest brother is forty, was graduated from grammar school, and is now a baggage-master on one of the railroads; he has no children. The next is a daughter thirty-eight years of age; she went through grammar school, worked as salesgirl, has two children, who are said to be well and normal. The next daughter, thirty-seven years of age, was graduated from high school, was a public stenographer, is well, and has two normal children. The next, a daughter thirty-five years old, went through grammar school, has always been in good health, and has two normal children. The next, a daughter thirty-four years of age, was graduated from grammar school, has always been in good health, and her children, two in number, are normal. The next, a son thirty-two years of age, went through grammar school, is a baggage-master on the New Haven Railroad, and is normal. The next is the patient. The next, a son thirty years of age, went through grammar school, is a buyer in an important industrial organization, is well and temperate. The daughter, twenty-eight years of age, is a grammar school graduate, and is a telephone operator. The next son, a grammar school graduate, is on the Marine Shipping Board. The next, a daughter, was graduated from grammar school, is somewhat nervous, and is employed as a filing clerk.

The father and mother of this large family are, on the whole, normal. They had elementary education. *The father* had tuberculosis for a time, but has recovered; he is sixty years of age. There are three living brothers and sisters on the paternal side, who are well.

The mother died at fifty-one of pneumonia. There is no history of any abnormalities. Her family is not so well known, but all are recorded as well. There is no feeble-mindedness amongst their descendants.

The paternal grandparents died early in life, but there are no abnormalities recorded.

This is the history of a family average in every way; on the whole, an asset to the community.

REFERENCES (*Chapter IX*)

1. Davenport, Charles B.: "Heredity in Relation to Eugenics." Henry Holt & Co., New York, 1911.
2. Dugdale, R. L.: "The Jukes; a Study in Crime, Pauperism, Disease, and Heredity." G. P. Putnam's, New York, 1902.
3. Estabrook, Arthur H., and Davenport, Charles B.: "The

Nam Family; a Study in Cacogenics." Cold Spring Harbor, 1912.

4. ESTABROOK, ARTHUR H., and MCDOUGLE, IVAN E.: "Mongrel Virginians." Williams & Wilkins Company, Baltimore, 1926.
5. GODDARD, HENRY H.: "The Kallikak Family; a Study in the Heredity of Feeble-mindedness." Macmillan Company, New York, 1912.
6. MCCULLOCH, Rev. OSCAR C.: "The Tribe of Ishmael; a Study in Social Degradation." Proceedings of 15th National Conference Charities and Correction, Buffalo, July, 1888.
7. The Third Annual Report of the Eugenics Survey of Vermont. The Free Press Printing Company, Burlington, Vt., February, 1929.

CHAPTER X

SOME STATISTICS OF FEEBLE-MINDEDNESS INCLUDING ITS INHERITANCE

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The material selected for statistical analysis is made up of the clinical records of the Walter E. Fernald and the Wrentham State Schools.

Dr. Myerson personally examined the patients whose clinical records furnished our data from the Walter E. Fernald School. His examinations confirmed, with few exceptions, the diagnoses at the school. Where there were differences, they were not as to the feeble-mindedness of the inmates, but in which clinical class they more properly belonged. In the field work he was assisted by Miss Hannah J. Smith who later assisted me in gathering the data from the clinical records of the Wrentham State School. Miss Smith also proved of invaluable assistance in the various statistical procedures.

The clinical records of the two schools were studied under somewhat diverse conditions. At the Fernald School only summaries made from the clinical records were available, while at the Wrentham School direct reference to the records was made at the outset. This accounts for the fact that we are able to present more data from the Wrentham School than from the Fernald School, and also that in certain instances comparisons between data for the two schools cannot be made.

At the Fernald School approximately two-thirds of the resident population was studied, while at the Wrentham School the total admissions for six years, beginning with 1920, were studied. This difference in set-up must be always borne in mind when comparisons are made between data of the two schools. Where the resident population is studied, as at the Fernald School, we gain a picture of only a part of the admissions to the school and that part whose chances for return to the community have on the whole been found to be poor. The more favorable cases have been allowed to leave the school either on visit, on parole, or have been discharged outright. A difference in clinical picture also occurs when one studies the resident population instead of admissions. Those cases tend to be retained which more often require custodial care, such as the mongol, the cretin, and the microcephalic.

Certain other selectional influences affect the data of both institutions about equally; for instance, the method of admission. With the exception of those children who come to the schools through an order of the Probate Court — and these are a minority of all admitted — only those for whom application for admission has been made who are in the opinion of the Superintendent in urgent need of institutional care, are admitted. This means that only those cases where there is a serious community or family problem are permitted to enter. Social and economic conditions are uppermost, as one can see from Table I. The fact that there is a preponderance of females among patients admitted because of immoral background or for a (Court) delinquency makes this point more evident.

It is such important selectional influences as noted above, which most seriously affect data gathered from the clinical records of these schools and which make it difficult to draw inferences for the whole feeble-minded population in the community. No inference therefore should be made for the whole feeble-minded population from such data as ours unless it has been compared with data gathered from studies of the feeble-minded who have never been inmates of a training school.

At the Walter E. Fernald State School 845 cases (about two-thirds of the resident population at the time of the study) were analyzed. At the Wrentham School 983 cases were studied, a total of all cases admitted for the first time to the School for the six years beginning with 1920. (There were so few readmissions during this period that they were not considered in this study.) At the Walter E. Fernald State School the males predominate, there being 56 per cent males and 44 per cent females; at the Wrentham School the females predominate, there being 58 per cent females and 42 per cent males. This difference in sex distribution is not important, the Fernald School having more male beds available and the Wrentham School more female beds.*

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* We do not mean here that a sex difference as to admissions as a whole does not exist; for it does — the females tend to predominate. This has been the case for many years, particularly since the moron has come to be better understood. What we refer to is that the sex difference here noted is largely due to an administrative factor.

TABLE I. — *Situations bringing about Commitment to Wrentham State School — 1920–1925, inclusive*

Situations bringing about commitment	Patients					
	Both sexes		Male		Female	
	Number	Per cent	Number	Per cent	Number	Per cent
Number of Patients	983	—	417	—	566	—
All situations*	1,024	100.0	434	100.0	590	100.0
Economic	39	3.8	18	4.1	21	3.5
Sickness at home	11	1.1	4	0.9	7	1.2
Immoral background	88	8.6	23	5.3	65	11.0
No home	72	7.0	32	7.4	40	6.8
No desire of parent	49	4.8	20	4.6	29	4.9
Child difficult care	448	43.7	225	51.9	223	37.8
Delinquent, court	201	19.6	60	13.8	141	23.9
Others	90	8.8	41	9.4	49	8.3
Unknown	26	2.5	11	2.5	15	2.5

*Some cases had two or more situations bringing about commitment. This doubling is of no statistical importance because it amounts to only 104 per cent. $\frac{(104)}{(983)}$.

Definitions:

By "economic" situations: Unemployment, under-employment, desertion leading to financial stress, and similar situations. Does not include illness as a cause of economic difficulty.

By "sickness": Usually illness of parents.

By "immoral background": Conditions in the home encouraging immorality in the children.

By "no home": Parents or relatives could provide no home, or where death removed the mother and a home had to be found and none could be found except an institution.

By "no desire of parents": Where parents could provide and care for the child where the child was not exceptionally difficult to care for, either because of physical or mental handicap, yet the parents did not wish the inconvenience.

By "child difficult care": Where the child because of either physical or mental handicaps or both, was a trying problem for care under average home conditions; where the child was a contaminating moral influence in a home of average moral status.

By "delinquent, court": Where the patient had a definite court record not necessarily leading to commitment to a school for the feeble-minded.

"Others" and "Unknown" are self-explanatory.

It must be admitted, of course, that the results of this table represent the judgment of the persons analyzing the case-record material. Nevertheless, the picture it depicts is interesting and verifies a common impression among experts in an approximate quantitative manner.

It is also interesting to note an important sex difference. Females are more frequently admitted because of situations predominantly anti-social: "Immoral background" and "delinquent, court."

INTELLIGENCE QUOTIENT

Distribution by intelligence quotient of our Wrentham series (TABLE II) will be of interest because 9.5 per cent of the patients admitted were found to have I.Q's of 70 or over. Most of these are borderline cases and were considered deserving of institutional care. Very often the borderline case is as serious a community or family problem as the frankly feeble-minded case. The sex difference in this group is not statistically significant, though one would expect a preponderance of females here.

Analyzing the other groups from Wrentham we note that there is a statistical significance in the sex distribution in the moron group, the females predominating. Unquestionably this is due to the fact that social conditions play such a large part in the admission of patients to the Schools.

We do not have comparative material from the Fernald School and the Institutional Census for 1923 does not give exactly comparable data. In this Census the Massachusetts admissions for 1922 (totalling 322 admissions) were found to be approximately, for males: 11 per cent idiot, 29 per cent imbecile, and 60 per cent moron; and for females: 15 per cent idiot, 32 per cent imbecile, and 53 per cent moron. Comparing these figures with those in Table II for Wrentham, we find considerable disagreement. In the first place, the moron groups by sexes differ not only in their sex distribution but in their magnitude. We find the number of morons admitted to the Wrentham School significantly less than were admitted to all of the State Schools in Massachusetts in 1923. As to why there are these two differences, the one in sex and the other in the number of admissions, is something we cannot explain. It should, of course, be borne in mind that the United States Census figures are those for one year and it may have been an exceptional year.

TABLE II. — *Distribution by Intelligence Quotients of Patients admitted for the first time to Wrentham State School.—1920–1925 inclusive*

INTELLIGENCE QUOTIENT Groups*	PATIENTS					
	Both sexes		Male		Female	
	Number	Per cent	Number	Per cent	Number	Per cent
Total . . .	983	100.0	417	100.0	566	100.0
0–29 (idiot) . .	177	18.8	87	20.8	90	16.5
30–49 (imbecile) .	285	28.7	129	30.9	156	27.7
50–59 } moron . .	181	18.2 } 39.3	80	19.2 } 34.5	101	17.3 } 43.1
60–69	209	21.1	64	15.3	145	25.8
70 + borderline + .	95	9.5	45	10.8	50	8.6
Unknown . . .	36	3.6	12	2.8	24	4.1

* These groupings differ slightly from those of the American Society for the Study of the Feeble-minded, which are

0–24 Idiot
25–49 Imbecile
50–69 Moron
70 + Borderline +

This difference in this table is of no or very slight importance.

CLINICAL GROUPS

The two school populations were found to fall into clinical groups as shown in Tables III and IV, with the greater number in both schools falling in the unclassified group. There are differences between the diagnostic schedules used in the study of the two institutions but these are not of sufficient importance to disturb significantly the distributions. There are more cretins, mongolians, and spastics reported for the Fernald School, probably an effect due to the fact that at this School the resident population was studied. Studying each schedule by itself, there is a statistically significant fact noted in both, a sex difference among the congenital luetics, showing a definite preponderance among females. This result is what one would expect, considering the circumstances surrounding their admission.

THE COLOR FACTOR

At Wrentham it was found that 4.8 per cent of our cases were negro (see Table V). For Massachusetts the proportion of negroes under thirty-five years of age to the total population of similar age-period is 1.1 per cent (United States Census 1920). This difference is statistically significant (approximately 5σ), a result that finds much support in literature. For the whole State the figure is 3.2 per cent of first admissions to training schools during the calendar year 1922 (Census of the Feeble-minded and Epileptic, 1923). The rate for Wrentham is higher, probably because its district includes the Cape and the city of New Bedford where a larger proportion of persons of negro blood reside than is found for the State as a whole. (For New Bedford the proportion is 4.1 per cent — U. S. Census, 1920.) Syphilis may account in part at least for the greater admission rate of the negro, but this is unlikely because the evidence for the direct relationship between syphilis and feeble-mindedness has not as yet been shown. Dayton, Myerson, and others have demonstrated that syphilis (as measured by the blood Wassermann) is found less often among the feeble-minded who are institutionalized than it has been found for the general population.

Notwithstanding the implication of these facts, it is difficult to draw the inference that the negro as a race, because of fundamentally inferior stock, contributes more feeble-minded to the feeble-minded population of the State than the white population. *Their admission rate is higher, perhaps, because their social and economic status plays a large part in their gaining admission.* Their inferior social and economic status interferes with their progress and development, and this inferior environment unquestionably leaves its mark upon them not only in a social sense but in a biological one. At any rate, in this instance it is difficult to separate the effects of environment from those of heredity. All that we are certain of is that the proportion of negroes among the admissions to schools for the feeble-minded, at least in Massachusetts, is greater than one would expect from their proportion in the general population.

TABLE III. — *Clinical Diagnoses of Patients admitted for the first time to Wrentham State School — 1920–1925, inclusive*

DIAGNOSIS	PATIENTS					
	Both sexes		Male patients		Female patients	
	Number	Per cent	Number	Per cent	Number	Per cent
All diagnoses	983	100.0	417	100.0	566	100.0
Unclassified	715	72.5	311	74.5	404	72.0
Hydrocephalic	12	1.0	8	1.9	4	0.7
Microcephalic	21	2.1	8	1.9	13	2.3
Cretin	5	0.5	1	0.2	4	0.7
Mongolian	49	5.0	21	5.0	28	4.9
Congenital Luetic	46	4.6	13	3.1	33	5.8
Spastic	58	6.0	21	5.0	37	6.0
Feeble-minded Epileptic . .	60	6.5	30	7.0	30	5.3
Others	45	5.0	20	4.7	25	4.4

TABLE IV. — *Clinical Diagnoses of Patients in Residence at the Walter E. Fernald State School in 1925*

DIAGNOSIS	PATIENTS					
	Both sexes		Males		Females	
	Number	Per cent	Number	Per cent	Number	Per cent
All diagnoses	845	100.0	470	100.0	375	100.0
Unclassified*	612	72.5	349	74.0	263	70.0
Hydrocephalic	9	1.0	6	1.5	3	1.0
Microcephalic	17	2.0	7	1.5	10	2.7
Cretins	19	2.5	7	1.5	12	3.0
Mongolians	37	4.5	21	4.5	16	4.3
Congenital Luetic	69	8.0	32	7.0	37	10.0
Spastics	82	9.5	48	10.0	34	9.0

*Including Feeble-minded Epileptics.

TABLE V. — *Patients admitted for first time to Wrentham State School, distributed by Color — 1920–1925, inclusive*

COLOR	PATIENTS	
	Number	Per cent
Total	983	100.0
White	934	95.0
Negro	47	4.8
Unknown	2	0.2

THE AGE FACTOR

Few children are admitted below five years of age; the majority are admitted during school age (see Tables VI and VII). Their selection is largely determined by the policy of training schools whose aim for the past ten or fifteen years has been to take the feeble-minded young rather than merely to care for them on a purely custodial basis. A large part of the equipment of these schools consists of school rooms of various sorts and opportunities for vocational training such as grounds for farming, carpentry shops, and the like.

As the summaries prepared from the clinical records of the Walter E. Fernald State School consisted only of patients in residence, a table showing admissions for one year (Table VIII) from October 1, 1924, to September 30, 1925, has been added for comparison with similar data from the Wrentham School. The mean age of admission for Wrentham (for six years) is 12.5 ± 0.02, while at the Fernald School the mean age of admissions (for one year) is 14.3 ± 0.57. While it is apparent that at the Wrentham School females are admitted older than at the Fernald School, this observation is not significant in our opinion because of administration factors.

We find that the various clinical groups are admitted at different ages (see Table IX).* The unclassified (which is the most important group socially) tend to be admitted in the older age groups, while the other types tend to be admitted in the younger age groups. This is partly due to the fact that with many of the unclassified their feeble-mindedness is not obvious in the early years, becoming so only when, as they grow older, they make contacts with the outer world in school or elsewhere. With the other types, the feeble-minded behavior and the peculiar appearance are noted sooner. As these types are often infirm physically and require considerable physical care, often almost from birth, admission is asked for at an early age. These cases are most often found in the idiot and imbecile classes, with mental ages below eight years. The unclassified tend to fall in the moron class, with mental ages eight years and over; in this group the matter of physical care is minor; admission with them is largely a matter of segregation, education, and training.

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* Table X gives the age distribution of the resident population at the Walter E. Fernald State School and is not included here in the discussion because the data are not comparable.

As to what the actual age distribution is for the feeble-minded population (including both the institutionalized and non-institutionalized), we cannot infer from our data. We would probably find the classified types tending to fall chiefly in the younger age groups, more or less as in our data, because of the death rate usually prevalent among these types. Any further statement as to the actual age distribution of the unclassified as a whole would be a sheer guess. On the other hand, we would not be surprised to find little or no appreciable difference between the age distribution of the unclassified feeble-minded as a whole and that of the non-feeble-minded population.

TABLE VI. — *Age Distribution of Patients admitted for the first time to Wrentham State School — 1920–1925, inclusive*

AGE GROUPS	PATIENTS					
	Both sexes		Male		Female	
	Number	Per cent	Number	Per cent	Number	Per cent
All ages	983	100.0	417	100.0	566	100.0
1–5 years . . .	109	11.1	60	14.4	49	8.6
6–10 years . . .	277	28.2	138	33.1	139	24.5
11–15 years . . .	341	34.7	148	35.5	193	34.1
16–20 years . . .	169	17.2	54	12.9	115	20.3
21–25 years . . .	46	4.7	7	1.7	39	6.9
26–30 years . . .	17	1.7	4	0.9	13	2.3
31–35 years . . .	10	1.0	—	—	10	1.7
36–40 years . . .	7	0.7	1	0.3	6	1.2
41–45 years . . .	2	0.2	2	0.5	—	—
46–50 years . . .	—	—	—	—	—	—
51 years and over . .	1	0.1	—	—	1	0.2
Unknown	4	0.4	3	0.7	1	0.2

TABLE VII. — *Age Distribution of Patients admitted for the first time to Walter E. Fernald State School from October 1, 1924, to September 30, 1925*

AGE GROUPS	PATIENTS					
	Both sexes		Male		Female	
	Number	Per cent	Number	Per cent	Number	Per cent
All ages	140	100.0	98	100.0	42	100.0
0–4 years	4	2.8	0	0.0	4	10.0
5–9 years	35	25.0	21	21.4	14	33.0
10–14 years	52	37.0	47	47.9	5	12.0
15–19 years	27	19.2	19	19.3	8	19.0
20–24 years	11	8.0	2	2.0	9	21.0
25–29 years	5	3.5	5	5.1	0	0.0
30–34 years	3	2.1	1	1.0	2	5.0
35–39 years	2	1.4	2	2.0	0	0.0
40–44 years	1	0.7	1	1.0	0	0.0
45–49 years	0	0.0	0	0.0	0	0.0
50–54 years	0	0.0	0	0.0	0	0.0
55 years and over	0	0.0	0	0.0	0	0.0

TABLE VIII. — *Age Distribution of Patients in Residence at the Walter E. Fernald State School in 1925*

AGE GROUPS	Patients	
	Number	Per cent
All ages	845	100.0
1–4 years	3	0.5
5–9 years	93	11.0
10–14 years	237	28.0
15–19 years	186	22.0
20–24 years	80	9.5
25–29 years	62	7.3
30–34 years	54	6.5
35–39 years	34	4.0
40–44 years	31	3.7
45–49 years	18	2.1
50–54 years	9	1.0
55 years and over	8	0.9
Unknown	30	3.5

TABLE IX. — *Number and Percentage Distribution of Patients admitted for the first time to the Wrentham State School, by Clinical Diagnosis and Age — 1920–1925, inclusive*

CLINICAL DIAGNOSIS	PATIENTS IN STATED AGE GROUPS																	
	YEARS																	
	All		1–4		5–9		10–14		15–19		20–29		30–39		40–49		Unknown	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
All Diagnoses	983	100.0	86	100.0	256	100.0	344	100.0	194	100.0	80	100.0	18	100.0	3	100.0	2	100.0
Unclassified	715	72.7	40	46.5	159	62.0	272	76.8	159	82.5	69	86.2	12	66.6	2	66.6	2	100.0
Hydrocephalic	10	1.0	3	3.5	5	1.9	1	0.3	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0
Microcephalic	21	2.1	8	9.3	11	4.3	1	0.3	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0
Cretin	4	0.4	0	0.0	1	0.4	1	0.3	2	1.0	0	0.0	0	0.0	0	0.0	0	0.0
Mongolian	49	5.0	10	11.7	24	9.3	12	4.3	3	1.4	0	0.0	0	0.0	0	0.0	0	0.0
Congenital Luetic . . .	44	4.4	1	1.2	10	3.9	20	6.1	11	5.6	2	2.5	0	0.0	0	0.0	0	0.0
Spastic	51	5.2	11	12.7	16	6.2	18	5.8	3	1.4	1	1.2	2	11.1	0	0.0	0	0.0
Feeble-minded Epileptic . .	51	5.2	11	12.7	23	8.9	10	3.2	3	1.4	2	2.5	2	11.1	0	0.0	0	0.0
Others	38	3.8	2	2.3	7	2.7	9	2.8	11	5.6	6	7.5	2	11.1	1	33.3	0	0.0

TABLE X.— *Number and Percentage Distribution of Patients in Residence at the Walter E. Fernald State School, by Clinical Diagnosis and Age, in 1925*

CLINICAL DIAGNOSIS	PATIENTS IN STATED AGE GROUPS																											
	YEARS																											
	All		1–4		5–9		10–14		15–19		20–24		25–29		30–34		35–39		40–44		45–49		50–54		55 +		Unknown	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
All Diagnoses .	845	100.0	3	100.0	93	100.0	237	100.0	186	100.0	80	100.0	62	100.0	54	100.0	34	100.0	31	100.0	18	100.0	9	100.0	8	100.0	30	100.0
Unclassified .	612	72.5	1	33.0	69	74.0	180	76.0	130	70.0	51	64.0	46	73.0	33	61.0	22	65.0	26	84.0	13	72.0	8	89.0	8	100.0	25	84.0
Hydrocephalic	9	1.0	0	0.0	1	1.0	2	1.0	4	2.0	0	0.0	0	0.0	1	2.0	0	0.0	1	3.0	0	0.0	0	0.0	0	0.0	0	0.0
Microcephalic .	17	2.0	0	0.0	5	6.0	2	1.0	4	2.0	4	5.0	0	0.0	2	4.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Cretin . .	19	2.5	0	0.0	2	1.0	5	2.0	1	1.0	2	3.0	2	4.0	1	2.0	3	10.0	0	0.0	1	5.0	0	0.0	0	0.0	2	7.0
Mongolian .	37	4.5	0	0.0	5	6.0	10	3.0	10	5.0	4	5.0	2	4.0	5	10.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.0
Congenital																												
Luetic .	69	8.0	0	0.0	3	3.0	21	9.0	19	10.0	9	11.0	5	8.0	5	10.0	4	11.0	1	3.0	1	5.0	0	0.0	0	0.0	1	3.0
Spastic . .	82	9.5	2	67.0	8	9.0	17	8.0	18	10.0	10	12.0	7	11.0	7	11.0	5	14.0	3	10.0	3	18.0	1	11.0	0	0.0	1	3.0

NATIVITY OF PATIENTS AND THEIR PARENTS

We wish to understand so far as is possible the more important environmental and social influences which may have played a part in shaping the lives of the individuals concerned in our studies. Sex, age, and color have already been noted and now we come to a consideration of nativity.

Table XI gives the nativity of our Wrentham patients with data from the United States Census for 1920 added for convenience. Similar data for our Fernald patients are not available for comparison.

TABLE XI. — *Distribution by Nativity of Patients admitted for first time to Wrentham State School — 1920–1925, inclusive. Also Distribution according to U. S. Census for 1920, for State of Massachusetts (corrected approximately for Age Differences)*

NATIVITY	Wrentham Patients Number	Wrentham Patients Per cent	Massachusetts † Per cent
Total	983	100.0	100.0
Native born *	930	94.6	87.0
Foreign born	47	4.7	13.0
Unknown	6	0.7	0.0

*Including Negroes
†Age group 5—24.

Studying the above table we find there is a distinct preponderance of native-born (including negroes) in our Wrentham sample, a difference of 7.6 per cent. While statistically significant (approximately 9σ dif.), this result becomes of importance only when considered with the nativity of the parents.

TABLE XII. — *Distribution by Nativity of Parents of Native White Patients admitted for the first time to Wrentham State School — 1920–1925, inclusive. Also Distribution according to U. S. Census for 1920, for State of Massachusetts (corrected approximately for Age Differences)*

NATIVITY OF PARENTS	Wrentham Patients Number	Wrentham Patients Per cent	Massachusetts Per cent
Total	882	100.0	100.0
Both native born . . .	252	29.0	36.0
Mixed	259	29.0	17.0
Both foreign born . . .	339	39.0	47.0
Unknown	32	3.0	0.0

TABLE XIII. — *Parentage of First* Admissions to Institutions for Feeble-minded during 1922, State of Massachusetts (adapted from Table 30, U. S. Census of Feeble-minded and Epileptics in Institutions, 1923)*

	NATIVE WHITE				
	Total	Native parentage	Mixed parentage	Foreign parentage	Unknown
Number of admissions . .	280	105	43	92	40
Percentage of admissions: Unknowns included . .	100.0	37.0	16.0	33.0	14.0
Unknowns excluded . .	100.0	44.0	18.0	38.0	—
Colored included (estimated)	100.0	47.0	16.5	36.5	—

*Colored not included.

Coming next to a discussion of the parentage of native-born patients (the parentage of the foreign-born was excluded from consideration because the number of cases was so small), we find that Tables XII and XIII do not agree. We find that the Wrentham experience as shown in Table XII is not confirmed by Table XIII which gives the parentage of first admissions to all of the institutions for the feeble-minded in Massachusetts, but only for one year, the main difference being in the proportion of the native-born. (This difference is made more striking when the unknowns are excluded.) If we feel that Table XIII is not representative because it is for one year only, and therefore conclude that the Wrentham data can stand by themselves, we find the differences between the data for Wrentham patients and that for Massachusetts to be inconsistent. If the foreign-born are considered as furnishing an excess of feeble-minded patients, there ought to be a preponderance of both mixed and foreign-born over the Massachusetts percentages. This we do not find in Table XII.

It is difficult, therefore, to argue from our data as to the parentage of patients admitted to the schools for the feeble-minded. Further statistical work would have to be done and other data secured to answer this question.

Economic Status

The economic factor is said to play an important rôle in the genesis of feeble-mindedness; it is of importance in diagnosis. Economic considerations, in part at least, also cause many families to bring their children to training schools. Many cases come from other public institutions whose patients also tend to come from the poorer strata of society. Therefore an institutional sample probably differs much in respect to economic status from a sample made up of the larger number of feeble-minded who for one reason or another have not been cared for in institutions.

Table XIV gives the frequency distribution of the economic status of our Wrentham patients (there is no comparable data dealing with the patients from the Fernald School). With so many "unknowns" it is difficult to go far with the analysis of these data. At any rate, it is interesting to note that so large a number have come from public institutions with the economic status it implies. These number 155, — 20 per cent of the total number of patients, — whose economic status is known. The majority are females, many of whom were, prior to their admission to Wrentham, patients of public institutions for purposes of confinement (unmarried mothers). The feeble-mindedness of these patients has usually been discovered at these institutions. In a few instances the children are also admitted with their mothers. Some patients come from reformatories for women where their condition of feeble-mindedness has been discovered.

TABLE XIV. — *Economic Status of Homes of Patients admitted for first time to Wrentham State School — 1920–1925, inclusive*

Including Unknown Group

ECONOMIC STATUS	PATIENTS					
	Both sexes		Male		Female	
	Number	Per cent	Number	Per cent	Number	Per cent
All homes	983	100.0	417	100.0	566	100.0
Dependent	293	29.8	120	28.8	173	30.6
Dependent, institution	155	15.8	39	9.3	116	20.5
Marginal	228	23.2	96	23.0	132	23.3
Comfortable	84	8.5	52	12.5	32	5.6
Unknown	223	22.7	110	26.4	113	19.9

The "comfortable" group, as one would expect, is small. There are 84 cases in all, 50 of whom are in the moron class. The remainder are equally divided among the imbecile and idiot groups. The imbecile and idiot are often so difficult to care for that their parents, even though financially able to provide the special care required, find it best to send these children to training schools.

The dependent group (including the dependent institutional) in our data is considerably larger than one would expect for the general population; and *vice versa*, the marginal group is smaller than expectation. We have every reason to believe that the Wrentham results picture quite closely those that would be found for practically all other publicly administered training schools. On the other hand, it is well to bear in mind that, if we had the facts, the feeble-minded who remain outside of these training schools would probably give us a different picture as to economic status.

SIZE OF FAMILIES

In discussing this topic one must have clearly in mind whether or not one is considering the family into which the feeble-minded are born or whether the fecundity of the feeble-minded adult is in question. Popenoe has found the fecundity of the feeble-minded female, as represented in the families of inmates of the Sonoma State Home, not greater than what he believes is the average for the general population. He also found that the fecundity of the male inmates was of practically no significance, that as a rule they do not mate. We have no data on this score. We still feel, as Popenoe does, the lack of data concerning the fecundity of the non-institutionalized feeble-minded. Nevertheless, Popenoe's findings reopen the whole question of the fecundity of the feeble-minded, — the legend that the typical feeble-minded family is a large one having become almost confirmed tradition. We are pleased that this tradition is being questioned, for we believe that as we get away from drawing conclusions from single instances, especially museum examples such as the Kalikak family, we shall find that much that has been accepted as final about the feeble-minded will be discarded or modified.

When we come to consider the size of the family into which the feeble-minded are born, — that is, the fecundity of their parents, — we find our data illuminating. (See Tables XV and XVI.) Nevertheless, we are quite chary about drawing inferences from them even though our results seem to agree quite well with what Popenoe found in his California studies. He found the average number of children to be about three (with statistical correction for sampling error due to number of children in families). His families were like ours, — families into which the feeble-minded were born where the fecundity of the parents of patients was called into question. His families resemble ours in another particular; that is, both deal with a mixture of complete and incomplete families. This imposes a real difficulty statistically. It would be much better if we had enough completed families to make a study of them alone. This was apparently found impractical in Popenoe's study, as it was in ours.

The best study on this subject in our opinion is that by Dayton utilizing the case-record material of the Traveling School Clinics of Massachusetts. Having the advantage of being based on material not found in the special institutions for the feeble-minded, and being free of all the selectional influences inherent in a sample limited only to institutional cases, Dayton's studies have the additional virtue of having large numbers of completed families. In this connection it may be mentioned that the technique of examination and diagnosis was practically the same for the Traveling School Clinics as for the Fernald and Wrentham Schools. The techniques were in all instances developed by Dr. Fernald and his co-workers, and the personnel in charge of both the Traveling School Clinics and the Training Schools were largely personally trained by him. Dr. Dayton found the average number of children in completed families to be nearly five (with statistical correction*), and about seven (without).

Not having sufficient completed families in our series to work with, we may use to compare with ours Dayton's data for complete and incomplete families added together. Here Dayton

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*According to method of Lenz as given in *Eugenical News*, January, 1926, p. 2, ft.

found these families (without statistical correction) to have on the average about 6.24 children, — a larger number than ours (Wrentham 4.9, Fernald 5.3). We cannot explain these differences with any degree of assurance. On the other hand, there are certain factors which would account for the fact that our families appear to have a smaller number of children.

First, the Wrentham and Fernald samples contain a large proportion of idiot and low-grade imbeciles, but these hardly ever get into the school system and therefore do not get into the Traveling School Clinics. In these instances it is highly probable that the birth of a low-grade feeble-minded child, where the feeble-mindedness is so evident and so extreme, discourages the parents from having further children, with the result that there is a conscious, or perhaps unconscious, restriction in the size of the family. This holds with greater force in those instances where the low-grade feeble-minded child comes early in the sequence of birth. Second, an institutional sample includes, often enough to warrant consideration, instances where mother and children are both admitted at the same time. Because of the segregation of the institution the natural fecundity of these mothers is interfered with. Third, many a child is accepted for admission to a training school when, if the reason for application were only the feeble-minded status of the child, admission would be denied. Where the mother is dead or so seriously ill that the child becomes neglected or there is no one to care for it, the child becomes eligible for admission and is admitted. Social consideration superimposed upon feeble-mindedness is what brings about admission. In these cases the family does not increase in size, as the natural fecundity of the mother is not free to exhibit itself.

Bearing in mind all of these factors it is not easy to offer judgment in this matter. On the other hand, we cannot help but feel that for the unclassified group, Dayton's figures are probably the more representative; but for the classified group the Fernald and Wrentham figures are nearer the truth.

Despite these assertions, probable as they may seem, we must analyze further to ascertain whether or not some important fact or group of facts or relationships have not been covered up in the attempt to get at a statistical constant which would give us an approximate idea of the average size of the families in question. The truth may be that under special circumstances large families are born, tending to give us a higher mean. Table XVII gives a hint that this may be so. This table suggests that where both parents are feeble-minded we tend to find large families, but where the parents are apparently not feeble-minded, we tend to get families not so large and apparently near the average size for the general population of which we have a vague idea. But Dayton's data do not as yet give this detail, and without this information, either in his or other data, we do not know how important this factor is.

We cannot be certain that the family in which there is at least one feeble-minded child is larger on the whole than the average family with neither feeble-minded parents nor feeble-minded children. Dayton's data would tend to the belief that the former type of family tends to have more children than the latter. We may feel a little more sure of this in the case where both parents are feeble-minded because our data, though scanty in numbers, falls in line with what other investigators have found to be true where both parents are feeble-minded. Nevertheless, no one has made or reported a survey of families in the general population where both parents are feeble-minded. Until this is done, we must still conjecture. We do not even feel it safe to compare the mean number of children either of our families or of Dayton's families with similar means which have been published for the general population. In some cases we do not know how these have been derived. In others we do not know what adjustments to make so that comparison with our data would be a safe statistical procedure. Averages computed for the general population* do not take sufficiently into consideration the factor of complete and incomplete families; the mean age of the parents and its dispersion are not known; the various economic and social levels are not marked out, and many similar and analogous errors are contained within these means as well as within our own.

In addition, any real answer to the question of size of family should take into consideration not only the families of one generation but the families of a number of generations. This we are not able to do. This is necessary, however, in order to measure the effect of social and economic factors which have taken place over a period of years, for, after all, it is generally

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*The United States Census Birth Statistics for 1920 give the average number of children ever born to mothers of 1920 in the registration area for white children:

Ages of mother	Average number of children ever born Native-born mothers	 Foreign-born mothers
40–44	7.4	7.9
45–49	8.7	9.2

These figures are only suggestive of the average size of completed white families for the registration area (assuming that the age 45 is the natural limit of fecundity). That is so because only those families were included where a child was born to a white mother between the ages of 40 and 49 inclusive. What we would prefer to know is the average size of families of mothers whose ages range between 40 and 49 inclusive. At any rate, it is a little clearer to see that the average size of families complete or not complete is not a datum which one can derive without the feeling that it may be inadequate for statistical induction.

conceded that many such factors influence fecundity more or less. Birth control may be cited as an instance.

In short, the problem of size of family is bound up with so many difficulties which at present defy analysis that we are practically left without a decisive answer. We ourselves believe that if size of family is a factor of importance, it is only so in those instances where both parents are feeble-minded.

TABLE XV. — *Number of Siblings (including Patient) in Families of Patients admitted for first time to Wrentham State School, by Broad Diagnostic Groups — 1920–1925, inclusive*

NUMBER OF SIBLINGS IN FAMILY	PATIENTS WITH SPECIFIED NUMBER OF SIBLINGS					
	Total		Unclassified*		Classified	
	Number	Per cent	Number	Per cent	Number	Per cent
Total	983	100.0	715	100.0	268	100.0
1	76	7.8	50	7.0	26	9.7
2	127	12.9	86	12.0	41	15.3
3	139	14.1	98	13.7	41	15.3
4	146	14.8	101	14.1	45	16.8
5	127	12.9	97	13.5	30	11.2
6	93	9.4	69	9.6	24	9.0
7	72	7.4	55	7.7	17	6.3
8	42	4.3	30	4.2	12	4.5
9	43	4.4	34	4.8	9	3.4
10, and over	68	6.9	53	7.5	15	5.6
Unknown	50	5.1	42	5.9	8	3.0

*Including "unknowns," over 90 per cent of whom have been ascertained to be "unclassified."
Mean number of siblings per family for all cases: 4.8 ± 0.09
Mean number of siblings per family for unclassified cases: 4.8 ± 0.1
Mean number of siblings per family for classified cases: 4.5 ± 0.3
Mean number of siblings per family for all cases, corrected for sampling error due to number of children in families: 3.2

TABLE XVI. — *Number of Siblings (including Patient) in Families of Patients in residence at the Walter E. Fernald State School by Broad Diagnostic Groups, in 1925*

NUMBER OF SIBLINGS IN FAMILY	PATIENTS WITH SPECIFIED NUMBER OF SIBLINGS					
	Total		Unclassified		Classified	
	Number	Per cent	Number	Per cent	Number	Per cent
Total	845	100.0	612	100.0	233	100.0
1–3	232	27.5	165	27.0	67	29.0
4–6	237	28.0	184	30.0	53	23.0
7–9	128	15.0	86	14.0	42	18.0
10–12	32	4.0	24	4.0	8	3.5
13–15	12	1.5	9	1.5	3	1.5
16 and over . . .	0	0.0	0	0.0	0	0.0
Unknown	204	24.0	143	23.5	61	26.0

Mean number of siblings per family for all cases: 5.0 ± 0.11
Mean number of siblings per family for unclassified: 5.0 ± 0.13
Mean number of siblings per family for classified: 5.6 ± 0.23
Mean number of siblings per family for all cases corrected for sampling error: 3.5

TABLE XVII — *Distribution by Number of Feeble-minded Siblings (including patient) and Parental Heredity of Patients admitted for the first time to Wrentham State School — 1920–1925, inclusive*

Number of F. M. Siblings.	PATIENTS WITH STATED PARENTAL HEREDITY																																			
	Total			Both Normal			One Feeble-minded. One Normal			Both Feeble-minded			One Feeble-minded. One Mental			One Feeble-minded. One Epileptic			Both Mental			One Epileptic. One Mental			One Epileptic. One Normal			One both Feeble-minded and Mental			One Mental. One Unknown			One Feeble-minded. One Unknown			Unknown		
	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females	Both	Males	Females
Total	983	417	566	346	183	163	26	15	11	49	17	32	11	3	8	3	1	2	3	3	0	2	1	1	15	9	6	1	1	0	34	19	15	77	13	64	416	152	264
1	490	243	247	312	166	146	7	4	3	2	1	1	4	1	3	1	0	1	1	1	0	1	0	1	12	7	5	0	0	0	12	9	3	22	6	16	116	48	68
2	143	50	93	13	7	6	9	3	6	15	5	10	2	0	2	1	1	0	2	2	0	0	0	0	3	2	1	1	1	0	6	2	4	20	1	19	71	26	45
3	45	16	29	1	0	1	1	1	0	13	4	9	3	2	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	1	1	8	2	6	16	5	11
4	18	7	11	1	1	0	0	0	0	5	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	9	3	6
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	3	1	2	0	0	0	1	1	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	2	0	2	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown . .	281	100	181	19	9	10	8	6	2	9	5	4	2	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	13	6	7	25	4	21	204	70	134

THE INHERITANCE OF FEEBLE-MINDEDNESS

We have now come to the discussion of the central problem of our research: Does it appear likely that feeble-mindedness is an inherited trait? Stated more accurately, does feeble-mindedness occur according to established Mendelian ratios?

We cannot treat feeble-mindedness according to the usual methods of the genetic laboratory. There cannot be matings at will nor under controlled conditions. There can be proof only by analogy, always a dangerous method, but unfortunately the best that can be employed at the present time when one is studying a topic like that of inheritance among humans. Of course, there may be a number of qualitative facts of importance which may lead one to cast out or to accept a theory such as the Mendelian. The observation repeatedly made that where there are feeble-minded parents there tend to be feeble-minded children — an observation also noted in both our samples — is an important qualitative fact. It does not of itself prove inheritance. The observation that where fathers are sea-faring men, the sons tend to be sea-faring men when grown up is an important observation, but no one today assumes that the occupation of the sea is an inherited (sex-linked) one in the biological sense.

Agreement with established Mendelian ratios is excellent proof of biological inheritance when made under carefully controlled conditions, but it should be borne in mind that these conditions are not satisfied in studies like ours made upon the clinical records of training schools or even upon genealogical material.

Table XVIII gives the number of families of our Wrentham patients having a specified number of siblings (including the patient), with the percentages of feeble-minded children among them, compared with the theoretical expected percentages if feeble-mindedness behaves as a simple recessive. It is interesting how closely the distribution agrees with the expected theoretical ratios. These ratios are found for both animals and plants when a trait in question is a simple recessive and where the sample includes only those families where at least one sibling has the trait in question and where there has been no selective mating.* The differences noted between the observed and expected ratios may be ascribed to sampling except in the case of the families of nine and ten siblings where the number of feeble-minded observed is significantly less than that which is theoretically expected. That we should have such a close agreement is noteworthy. The fact that there is disagreement in the case of families of nine and ten siblings does not prevent us from drawing the tentative conclusion we have from this agreement. In our opinion very large families have a higher mortality rate (as has been ascertained), which would tend to give us inadequate information about those children who had died before their mental status could be determined. *That is, in our case, we have among the unknowns, which we have credited as negatives (a certain number of whom are deaths), a larger proportion of the definitely feeble-minded than among the smaller families.*

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*In the case of the feeble-minded who marry, one has to bear in mind the factor of assortative or selective mating. This is an important question particularly in the case of the moron. How important a factor this is it is difficult to decide; and if important, just in what ways is not definitely known. If in fact it is a large factor, our reasoning by analogy is fallacious. On the other hand, the agreement through analogy suggests the possibility that assortative or selective mating is not the important factor so often assumed.

One should be cautious about accepting from our material the conclusion that feeble-mindedness behaves as a simple recessive because of the assumptions made and noted in the notes to Table XVIII.

There is one further step one may take before accepting the conclusion here stated that our sample of feeble-mindedness behaves as a simple recessive. If it behaves in this way, we should find according to theory that the children of parents who are both feeble-minded are all feeble-minded. Does our material check with this deduction? We went directly to the original case records in our Wrentham series and studied each intensively; that is, those cases where it was known that both parents were feeble-minded and the number of children born was also known. About 20 per cent of the cases had no statement about the children who were not diagnosed as being feeble-minded. The remaining cases gave the information that every child in these families was feeble-minded, with three exceptions. There was one family where the other children were called borderline, and two families where each of which had two children who were definitely called "normal."* This result may be considered a fairly good check when one takes into consideration the kind of material analyzed. Of course, it should be remembered that the number of cases which were studied in making this check was less than 40, a number not large enough to be satisfactory.

The Fernald data do not allow duplication of this analysis made on the Wrentham material. Another such analysis on case material of another institution is essential before one should give the Wrentham result too much credence.

One other aspect of the problem of the inheritance of feeble-mindedness was investigated, with the data giving contradictory results. This dealt with the theory of polymorphous heredity.

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*That is, free from feeble-mindedness, epilepsy, or mental disease. In fact, there was no question of borderline feeble-mindedness. Of course, these four children may have had fathers out of wedlock.

The question was asked whether or not mental disease was found more often in families of the feeble-minded than it was found for the general population. The Wrentham data showed a significant excess of mental disease among the parents, while the Fernald data showed that there was neither an excess nor a deficiency. No attempt was made to analyze our material for epilepsy as it was found impossible to get data relating to its incidence in the general population that was in any way comparable with what was obtained in the case of mental disease.

TABLE XVIII. — *Number of Families of Patients admitted for the first time to Wrentham State School having specified Number of Siblings (including Patient) with Percentage of Feeble-minded Children among them — 1920–1925, inclusive, with the expected percentages if Feeble-mindedness Behaves as a Simple Recessive*

		FAMILIES HAVING SPECIFIED NUMBER OF SIBLINGS (INCLUDING PATIENT)																			
		1		2		3		4		5		6		7		8		9		10 +	
	Total Families	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded	Number	Per cent of Feeble-minded
Observed	591*	76	100.	97	60.	115	47.	115	37.	82	30.	25	23.	5	30.	25	23.	12	14.	39	16.
Expected	– †	–	100	–	57 ± 2	–	43 ± 2	–	37 ± 2	–	33 ± 2	–	30 ± 3	–	29 ± 6	–	28 ± 3	–	27 ± 4	–	26 ± 1

*591 out of 983 admissions (about 60 per cent) had information as to size of family and number of feeble-minded siblings. We have here discarded "unknowns" on the assumption that, were the information known instead of unknown, the meaning of the table would not be materially changed. We have assumed that the probability of obtaining information as to the number of feeble-minded siblings is not correlated with the size of the family; also that where the number of feeble-minded siblings is known and nothing is stated about the children who are not declared feeble-minded, they are not feeble-minded. In addition patients have been counted as representing separate families; that is, a family has been counted twice, or in rare instances three times. It is not uncommon in schools for the feeble-minded to have a number of related siblings under care. This particular circumstance lessens somewhat the statistical significance one would attach to the above percentages.

The observed distribution includes both the classified and the unclassified. When the unclassified cases were analyzed by themselves, the same observed ratios were noted as were found for the group as a whole. Whatever differences occur were found to be not significant statistically.

† The expected percentages in Table XVIII were estimated as follows: Let p = the chance of a feeble-minded person among siblings in the family, n = number of siblings in a family, N = number of families. In the general population then by chance alone we should expect the siblings of the family to be distributed according to the terms of the expansion of $(p+q)^n$. But the above data was selected obviously so that it contained no families in which no siblings were feeble-minded. Therefore $\Sigma(p+q)^n$ in the selected sample is $1-q^n$ instead of unity. The mean of the sample is therefore $\frac{np}{1-q^n}$ and the expected proportion of feeble-minded in the family of n siblings is $\frac{p}{1-q^n} = P$. The standard deviation of the above distribution is

$$\sigma = \sqrt{\frac{npq+n^2p^2}{1-q^n} - \frac{n^2p^2}{(1-p^n)^2}}$$

and the s. d. of the proportion P is

$$\sigma P = \sqrt{\frac{pq}{n(1-q^n)} + pP - P^2} = \sqrt{P\left(\frac{q}{n}+p-q\right)}$$

The mean proportion of N samples of n siblings is $\frac{\Sigma P}{N}$ and the s. d. of the mean $\frac{\Sigma P}{N}$ is $\frac{\sigma P}{\sqrt{N}}$.

Some estimate of the p must be made in order to evaluate these expressions. If we assume that feeble-mindedness is a character which behaves as a Mendelian recessive then we can let $p = \frac{1}{4}$. On this assumption the above expected proportions with their standard deviations have been computed. The agreement of the observed percentages with the expected percentages is very good except for the families of 9 and 10 siblings where the number of feeble-minded observed is significantly less than that which is theoretically expected.

CONCLUSION

Bearing in mind that throughout the analysis of the material it was generally assumed that a trait or factor was negative or did not exist if no observation was made as to that trait or factor, our study suggests the hypothesis that feeble-mindedness of the unclassified type behaves as a simple recessive. The import of this conclusion is limited for the observations were of the institutionalized feeble-minded and neglected the larger body of the feeble-minded outside of institutions. The data show that social and economic factors play a large part in the admission of the feeble-minded to training schools, and this fact further limits the significance of this hypothesis.

NOTE BY DR. MYERSON AND DR. ELKIND

Where a character or set of characters cannot even be defined (see Part I), it is nearly impossible to carry out statistical studies of real validity. This is the situation of feeble-mindedness at present. One simply does the best he can with current definitions, for often in science progress is made with tentative definitions or with partial knowledge.

It is true it is dangerous to analyze statistically clinic records. It is the same of genealogical material. But until better records are available, we must be content to study what we have. It is only by doing so that we will learn how to collect data sufficiently adequate and accurate for scientific analysis.

We must know in advance what data we need; we must carefully consider the matter of definitions; we must be sure to get the required data in each case, record them carefully, negative as well as positive data. We must take into account the errors of observation. (See paper by Elkind and Doering, "The Application of Statistical Method to the Study of Mental Disease." American Journal of Psychiatry, Vol. VII, No. 5, March, 1928.)

We believe our institutions have not taken advantage of their opportunities to make their clinical records sufficiently adequate for scientific analysis. Family studies could easily be made at the time of a patient's admission to a hospital, and these studies should be made nation- and world-wide, with agreed-upon lines of study and with agreed-upon methods of recording. Such studies made over a generation or two would be of value, although even then we doubt that it could solve definitely the problem of causation. Limited as we are to statistical method by the very nature of our problem, we can never be sure of the relation of cause and effect. Experimental science is not yet applicable to feeble-mindedness; until it is, all of our research in the field of feeble-mindedness must be conjectural. But we can reduce the degree of conjecture. This should be our task in the future.

CHAPTER XI

SPECULATIONS CONCERNING THE GENESIS OF FAMILIAL, OR HEREDITARY, FEEBLE-MINDEDNESS

We are not at a stage in the understanding of feeble-mindedness where it is possible to consider in any detail such speculations as concern themselves with the Mendelian phase of feeble-mindedness.* The earlier work of Davenport and Goddard has been tacitly disowned by themselves, and it is a far cry from those days in which all forms of criminality, social failure and delinquency were linked up indissolubly with feeble-mindedness. One by one the bogies have disappeared from the literature. The great prolificity of the feeble-minded is really no longer a fact. The great tendency of the feeble-minded to all kinds of destructive, anti-social acts has been exploded, and it has become increasingly recognized that the feeble-minded of the higher type, at least, can be educated to fairly useful social adjustment. (See in this connection the reports of Dr. Charles Bernstein, and for a full account, the excellent chapters by Dr. Stanley P. Davies in his book, "The Social Control of the Feeble-minded.") Feeble-mindedness is recognized as a complex of conditions and one of the conclusions reached in this paper, that feeble-mindedness on the whole is associated with defective bodily structure, leads to the conclusions that whatever injurious is operating is operating on the individual as a whole.

A considerable proportion of feeble-mindedness runs in families. It involves siblings and parents in some unknown quantitative relationship. There is no evidence of a trustworthy kind

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*When Goddard[6] raises the question whether or not the moron is really feeble-minded, he throws out in effect the larger part of those cases which have been emphasized as hereditary in his studies. In a private letter to me, Dr. Davenport states that he has at present no theory to advance for the hereditary side of feeble-mindedness. This is in line with his more recent writings, in which he feels that the Mendelian hypothesis does not explain all the facts of the feeble-minded and it represents in part his effort to include social maladaptations of various kinds as feeble-mindedness.

Castle[3] very strongly objects to feeble-mindedness as a trait which can be of simple Mendelian inheritance.

Wallin[19], in his studies of *Mental Deficiency and Handicaps*, states that in his analysis of 3,300 family histories of extra-institutional subjects, he found no clear-cut evidence of neuropathic inheritance.

The textbook writers, of whom Tredgold[18] can be put forward as the type, believe strongly in the polymorphic theory of heredity, and link up feeble-mindedness in a descendant with all kinds of conditions in the ancestry. But Tredgold believes that environmental factors create pathological germ plasm. He says that in 90 per cent of the patients suffering from mental deficiency, the conditions result from the morbid state of the ancestors. It so impairs the vital powers of the embryo that full development cannot take place.

See Davies[4] for a very excellent discussion of the whole situation in regard to the heredity of feeble-mindedness at the present time.

to show that it runs inevitably and forever, or that it represents the kind of hereditary quality represented in blue eyes, color of skin, etc. Assuming that there is an hereditary factor in a considerable proportion of feeble-mindedness, I deliberately adopt as a working hypothesis that what we call feeble-mindedness may arise from two sources — first, an injury to the germ plasm of one generation or of several generations, and which manifests itself in the production of inferior individuals; second, that the earliest environment of the child, including the uterus of the mother, may be responsible for the defective individuals. The effects of the environment have not been sufficiently studied, and in adopting this uterine injury as part of a working hypothesis, I hope to stimulate study of uterine conditions in a more thorough way than has hitherto been done. *In adopting this working hypothesis, I am perfectly aware of the fact that there is absolutely no proof of its truth in so far as the human being is concerned.* It merely represents a logical "As if," an approach by a scientific theory which, to me, seems to carry with it great possibilities in the shape of fruitful results. The studies here recorded indicate to me that the whole individual, in the sense which William W. Graves has emphasized, is involved — that forces are operating which do not involve unit characters, but which involve large segments of the organic life of the individual, and it is this diffuse injury which is responsible for the conditions which we call feeble-mindedness.

In their reaction against the naïve formulae of Lamarck, that the environment operated directly upon the germ plasm, that use and function produced changes in the germ plasm which could be transmitted to posterity, the biologists fell into the opposite error of ascribing everything to heredity and dismissing cavalierly and with scorn the idea that the environment could in any fundamental way affect races. Though Weismann himself conceded that certain pathological influences could interfere with the development and alter the capacity of the descendants of individuals so treated, the whole tendency of biologists was to build up around the continuity of the germ plasm idea the secondary notion that the germ plasm lived in a sort of sanctum sanctorum, into which nothing environmental could intrude, and that no matter what the vicissitudes or the fortunes of the individual might be, the germ plasm lived on serenely unaltered. It did not seem to be taken into account that the germ plasm was continually being bombarded by environment, that the very constancy of germ plasm was associated with a constant environment, that there was no germ plasm without an environment, that each bit of germ plasm was environment to the next bit of germ plasm, and that testicle and ovary, as they were factual and non-mystical in the living animal, were subjected to toxic and nutritive influences comparable to those operating upon the rest of the body. No one who has done autopsies and found atrophies and inflammation of these generative organs can feel that they are exempt from the vicissitudes which fall upon all living tissues and that, consequently, germ plasm is not exempt from the unfortunate vicissitudes which involve body plasm.

It is true that not all biologists have made this complete separation between those inner forces which are represented in heredity, and those outer forces which are represented by the whole cosmos. From Darwin all along the line there has been a distinguished list of biologists who have insisted that environmental forces playing in and out of germ plasm operate on it, altering it for the better or for the worse, producing mutations and deformities; that germ plasm and soma plasm were not separate entities, in that germ plasm was scattered throughout the whole organism and formed part of the reaction of every cell to life. I have cited these authors in detail in my work, "The Inheritance of Mental Diseases," and do not intend to line up these distinguished environmentalists again. First, I wish, however, to cite those pieces of work which show that even the genes express their hereditary characters by virtue of an environment which permits that expression, and when that environment is changed, the genes express themselves in a hereditary way, but in a totally different way. Second, I shall line up some experiments, familiar for the most part, which indicate that the environment can be focused upon the germ plasm so as to alter the character of the descendants for several generations, corresponding to what August Forel calls *blastophthoria*. Third, I shall cite some experiments, perhaps of doubtful authenticity but put forth by reputable men, that the use of the intelligence can be transmitted to posterity in the shape of an increased facility. These are very critical and important experiments. They need, of course, amplification and repetition. They are cited, however, for what they are worth. Fourth, I shall cite cases of identical twins brought up in different environments with curious results as to intelligence and temperament differentiation. Fifth, I shall cite social studies bearing on the effect of the environment on the intelligence of children.

I turn now to some of the writings and experiments which show that the inner forces, or heredity, and the universal forces, or environment, interplay in such a way as to make futile and hairsplitting any technical statements that heredity is not fundamentally directed in its course by the environment. The fact that all the hereditary substances dwell in tissues constantly being played upon by the blood stream would make this *a priori* true. But experiments are not lacking to destroy the conception of an immutable germ plasm.

I. *The Right Environment is Necessary for the Production of Mendelian Characters.* If the environment is changed, other characters appear. I cite the statements made by Jennings[7] in "Prometheus" regarding the fruit fly:

"In that animal whose heredity is better known than is that of any other organism, the fruit fly, individuals occur with hereditary abnormalities. The abdomen is irregular, deformed; the joints between the segments are imperfect. This is sharply inherited as a sex-linked character. . . .

"But the fruit flies in the laboratory usually live in moist air, and this inheritance appears under those conditions. If they are hatched and live under dry conditions, the abnormality doesn't appear — even in those daughters which indubitably inherited it. Clearly it is not necessary to have a characteristic merely because one 'inherits' it. Or more properly, characters are not inherited at all; what one inherits is certain material that under certain conditions will produce a particular characteristic; if those conditions are not supplied, some other characteristic is produced. . . .

"Other known cases illustrate the effect of the environment in altering the totality of the organism, its entire personality, as it were. Many years ago there was discovered in Mexico a salamander that lives throughout its life in water, has a heavy, broad body, a tail flattened for swimming and external gills. In this condition it becomes mature, lays its eggs in the water, produces young that inherit its characteristics and finally dies. . . . Breeding experiments on these animals would show these characteristics to be inherited in the usual Mendelian manner.

"But after years in which these were the only inherited characteristics that they were known to possess, certain different environmental conditions were brought into action, and thereupon the axolotls developed a new set of inherited characteristics, a new and diverse personality. The external gills disappeared; the body became smaller, slender, and of a very different shape; the animals came out on the land and remained there, breathing air. They now became mature in this amblystoma condition, laid eggs, produced offspring which, again, under these conditions developed into land animals of the same sort; and this, too, may continue for generation after generation."

The mutation rate can be altered by environmental forces: The heart of the whole theory of heredity has been that mutations do not arise from environmental forces. Whether they do or not, environmental forces can be utilized to produce mutation. I cite the work of H. J. Muller[12] and his associates. In his earlier paper, "Mutation," he states:

"External agents do not ordinarily increase the mutability sufficiently, if at all, to cause an obvious 'production' of mutation."

Of his later work, reported in "Science," it is stated:

"Chief interest centered in the recent attempts to alter the course of inheritance and the frequency of mutation by treatment with X-rays. The most intensive experiments in this direction were reported in detail by H. J. Muller, whose paper (for which the American Association prize was awarded this year) is abstracted in the section on the prize. By use of a special technique for measuring the frequency of mutations in drosophila melanogaster, he obtained results indicating that the application of sublethal doses of X-rays to sperm was followed by a large increase in the mutation rate of treated, as compared with control, cultures. The mutation rate in some treated cultures was estimated at 15,000 times the normal rate. F. B. Hanson, working in Dr. Muller's laboratory, at the University of Texas, reported on the direct effect of X-rays on the productivity and sex ratios of drosophila and reported also the appearance of many mutations in the X-rayed cultures. From the botanical side, L. J. Stadler reported on the occurrence of new endosperm characters that apparently had risen by mutation in maize ears X-rayed at the time of fertilization. The same investigator presented evidence for the occurrence of mutation in seedling from treated barley seeds. T. H. Goodspeed and A. R. Olsen reported that many variant types had been found in the progeny of X-rayed Nicotiana plants, and gave evidence of a considerable degree of chromosome irregularity following the treatment."

I cite the following from an article on the effect of heredity and environment in determining color of the Himalayan rabbit: It has been known for some time that the pattern of the Himalayan rabbit (pink eyes, white coat, dark ears, nose, tail and feet) depends on (1) a single factor allelomorphic with albinism, and (2) the temperature in which the rabbit is kept. If white hairs are pulled out and the animal kept in the cold, the new hairs come in black. (For further details see "Varieties of White Rabbits," by W. E. Castle[3].)

"N. A. Iljin[8] has recently studied the temperatures at which the color change takes place. He finds that it differs for different parts of the body, and most important of all, it differs in different races of Himalayan rabbits. Some races show the reaction at a slight lowering of the temperature, and the others have to be subjected to extreme cold to bring it about. Iljin shows that what is inherited in Himalayan rabbits is not a pattern, but a specific type of reaction of different tissues to specific environmental conditions. The same genes determine white at one temperature and black at another; while other genes alter the threshold of response, *i.e.*, raise or lower the dividing line between a 'black' temperature and a 'white' one.

"Thus it is possible within limits to alter a character either by altering the environment or by altering the genetic constitution through breeding. This double control increases the number of possible kinds of expression of the character, for each new environmental factor which becomes known has much the same effect as a new set of genes discovered, *i.e.*, the number of possible combinations is increased not merely arithmetically but geometrically.

"Both Iljin's work with Himalayan rabbits and Zaqadovsky's are in the direct line of the new advances in genetics, which attempt to determine how the genes produce their effects and how they are fitted into a scheme of development which is the resultant of both internal and external forces."

II. *The Sex Ratio may be altered by Environmental Changes.* A. Franklin Shull[15] shows what is now a clinical, biological fact: that the sex ratio can be changed by many expedients in rotifers. He states, "Though the hereditary factors concerned with the life cycle and determination of sex are important, probably the most important, the extent to which they come to expression in any family may be greatly altered by environment conditions. A long list of chemical substances has been found, each of which when dissolved in the water in which the rotifers live reduces the proportion of sexual reproduction, and hence of male. Some of these substances are ammonium carbonate, and other ammonium salts, cane sugar, uteric acid and creatin. Concentrated solutions of some of these may practically exclude male production even in lines from which hereditary factors alone produce many males. . . . It was first discovered by Whitney and later verified by my own work that green food greatly increased the amount of male production."

Arthur M. Banta[2] and L. A. Brown[2] found that crowding the females from early life until they produced young causes the production of an excess of males. They confirmed the experiments of Grosvenor and Smith. Uncrowded bottles of the females produced a low percentage of males; crowded bottles produced an excess of males.

Many experiments have been done in recent years to show that diet alone may create absolute sterility in females. (*See* McCOLLUM, E. V.)

The environment may be focussed on the germ plasm and produce defectiveness for several generations. I refer the reader to my references in the "Inheritance of Mental Diseases," in which a long list of these experiments is given. Most important are the classical works of L. J. Cole and L. J. Bachhuber on the effect of lead. It seems definitely established that lead produces a marked blastophthoric defect, so that not only are the immediate individuals injured, but the offspring remain permanently underweight and underdeveloped.

The classical experiments of Stockard[17] and his co-workers on the alcoholized guinea pig show that one generation of animals may be injured by alcohol so that for several generations the defect or the inferiority is present.

D. Carleton MacDowell[10] states, "The main question under investigation may be stated as follows: Does this alcoholic treatment have any genetic significance? Is the race, as well as the individual modified in any way by this treatment? The present experiment appears to give an affirmative answer. The alcohol *has* modified the race."

Most interesting is the work of Guyer[7] and Smith[7], who by injecting into fowls the pulverized lens of rabbits obtained a serum having a remarkably lytic or destroying effect upon the lens of rabbits. When this serum was injected in pregnant albino rabbits during the first ten to thirteen days of the pregnancy, important results were obtained. Many of the foetal rabbits died. In the surviving ones there were marked defects in the lens or eyeball which became hereditary. The author stated that this defect has been transmitted for eight generations, and what is more important, the defect continually tends to become more serious in successive generations. It is only fair to state that the work of other writers has not corroborated Guyer and Smith.

I do not cite in detail the immense number of experiments that have been done which show that the X-ray and other agents may completely change the development of living creatures and their progeny. A long review of this subject is given by Halsey J. Bagg[1]. The names of Bohn, T. Hertwig, Motrim, Terr, Schaper, O. Hertwig, G. Hertwig, and Bataillon occur in the literature. Bagg states, "Arrests in the development and the production of abnormal types may be induced not only by radio activity, but by many physical or chemical agents. Abnormal temperature changes, treatment by many chemicals, lack of oxygen supply, or the over-abundance of carbon dioxide have produced marked changes in the developing embryo . . . By far the most interesting observations concern the presence of lesions similar to those described above in rat embryos, whose mother was treated with radio acrive solutions a considerable time *before* mating. In other words, the germ plasm of the mother was injured by radium and then, when pregnancy followed, the young were defective."

All these experiments indicate one important fact, which, at the risk of punning, I emphasize — *The genes need a genial environment;* that is, they need an environment which permits them to express their potentialities. Their internal structure may be altered by the environment so that new characters appear; consequently the mutation rate is increased. The internal structure may be so changed that abnormal, or defective, characters appear. A simple change in the environment may make what seems to be a definite character disappear, and a new character will appear which is as constant as the change in the environment and no more and no less.

I proceed to further important experiments emphasizing the fact that the environment can alter fundamental qualities of the individual and qualities which relate to the wellbeing of the individual and of his progeny. *The processes of ovulation and the uterine environment may be changed by environmental influences such as nutrition.*

A systematic investigation of the vaginal fluid, from the point of view of the relation of this fluid to the process of ovulation, was first systematically made in 1917 by Stockard and Papanicoloau. I refer the reader to the article by Stockard[17] for a complete description of the regular rhythm of changes which take place throughout the genital tract apparently under the influence of a hormone, which appears as the result of ovulation. The study of this vaginal secretion, or as Stockard puts it, "the vaginal smear," may serve as an indicator for any natural or experimental modification of the ovarian reaction. The effect of under-nutrition upon ovulation, that is, fundamentally upon the germ plasm, since the formation of the ovum is the work of the germ plasm, may be studied; and, similarly, the influence of other glands of internal secretion upon the ovarian reaction can be followed in life by this method.

These same authors have also written an article on the "Effect of Underfeeding on Ovulation and Oestrous Rhythm in Guinea Pigs." The effect of under-feeding produces a prolongation of the period between ovulations, called by the authors the diœstrum, and at the same time a congestion in the ovary and uterus and a degeneration of developing graafian follicles. The effect of this under-feeding depends upon the severity and upon the period between the ovulations at which it is carried out. This variation in the effect of the under-feeding, when applied at different periods of the diœstrum, is associated with the fact that the conditions of the ovary differ at the different times. The younger the follicle the less it is affected by under-feeding; whereas the graafian follicles, more fully developed, require much better nutrition. Thus a late under-feeding has a more injurious effect than an early one. "These experiments all demonstrate the sensitiveness of the follicles within the ovary to environmental conditions and when considered in more detail than is here possible, they throw light on many peculiar reproductive phenomena observed in nature. The extreme variations in the œstrous cycles recently recorded for the rat by Long and Evans (Proceedings American Association of Anatomists, Anatomical Record, April, 1920) may be in part, at least, due to the variations in the diet taken by the individuals."

These authors, Papanicoloau and Stockard, studied the formation of cystic growth in the ovary and uterus of the guinea pig. They discovered that malnutrition gives rise to marked cystic conditions in the ovary of the young guinea pigs. The changed nutritive conditions in the reproductive organs of the mother caused circulatory conversion and, as was pointed out in a previous communication, such conditions suspend the œstrous changes and prevent ovulation in these animals. The malnutrition expresses itself first within the ovary by the wholesale degeneration of developing follicles, as a result of which the cysts develop. "These experiments," conclude the authors, "seem to indicate that ovarian and parovarian cysts represent growths of persistent embryonic tissue, and that an accompanying congestion and high pressure are necessary to the formation of typical cysts, and that these conditions may result from disturbed nutrition as is demonstrated by under-feeding guinea pigs." These experiments, it seems to me, are of fundamental importance, in that they indicate that uterine and even ovarian changes may be produced by the environment and by social and cultural situations, since under-feeding can be definitely called both. They also indicate that the difference observed in children from time to time may easily be explained by a change in the social environmental conditions of the home or of the mother, such as, for example, under-nutrition which has occurred for one reason or another, in the poor due to poverty, in the well-to-do due to dieting or other causes, such as illness.

That under-feeding of the parents plays an important rôle in the under-development of the next generation is pointed out by

Friedrich von Muller in his article, "Observations during the Period of Undernutrition in Germany." He says, "The characteristic signs of avitaminosis are:

1. A diminution of fertility.
2. A retardation of development and especially of the growth of young animals and children.
3. Symptoms of malnutrition and disease in the fully developed adults."

He states further, "Abortions became frequent, in many young women menstruation ceased and in men there was a marked diminution in the libido. We can see, therefore, that there was a distinct diminution in the function of the gonads." But not only under-nutrition may bring about changes in the gonads. "Professor Stieve in Halle has shown in his experiments on mice, rats and geese that not only inanition but more so over-feeding and obesity checks fertility in both male and female, and brings about severe atrophy of the gonads. Furthermore he could demonstrate that fear, confinement and other severe *mental* influences damaged materially the power of fertility and produced an atrophy of the gonads as demonstrated by the microscope."

The German workers have done especially important work in the relationship between body and germ plasm. Starting with the notable work of O. Hertwig, a long line of distinguished biologists and medical men have contributed to this problem. Of special interest and importance in relationship to the point of view which is here set forth is the work of Professor H. Stieve of Halle[16]. In a long series of elaborate researches, he has discussed "Die Wechselbeziehungen zwischen Gesamtkörper und Keimdrüsen" (that is, his researches on the interrelationship between the organism and the reproductive glands).

Thus, in a research on the male goose ("16 Mastversuche an männlichen Gänsen," Arch. f. Entwickelungswech. Bd. 52, 1922, p. 313–362) he points out the relationship existing between the sexual activity of this animal and nutrition. Just prior to and during the period of heat, the testicles of this bird increase in weight and in content in remarkable fashion, while at the same time the general bodily weight greatly diminishes. If the goose is fattened and restricted in activity in the period of sexual inactivity, the body weight increases enormously and there is a definite retardation of the growth and development of the testicles, more especially of the generative cells, so that the process of evolution of the germ plasm into mature spermatozoa is altered, delayed, and in a general way injured by the over-feeding. Even in the period of heat itself, when forced feeding does not have anywhere near the fattening effect that it has in the period of sexual rest, the sexual evolution is definitely altered with definite structural changes in the generative part of the testicle. Thus, in this animal, with its definite interrelationship between diet and sexual activity, alteration in the dietary habit produces alteration in the structure and function of the generative part of the testicle itself. In other words, the germ plasm is definitely altered by nutrition.

In a very significant research (VI. — "Der Einfluss des Coffeins auf die Fortpflanzung des Russenkaninchens" — Zeitschr. f. mikr.-anatom. Forschung, Bd. 15, 1928, p. 599–652), Professor Stieve studied the effect of caffeine on the Russian guinea pig. One can only say that this author's articles must be read in the original to appreciate the carefulness of the study and the thoroughness and scientific spirit which animates his researches. It must be emphasized that what appertains to the guinea pig does not necessarily appertain to man, and that the following statements regarding the effect of caffeine on germ plasm are not to be applied to the human being. What is here adduced is evidence that germ plasm, like all other living tissues, resists environmental injury, succumbs to environmental injury, may show elective and specific weakness to environmental forces, and even may become adjusted to environmental agents, and finally acquire tolerance for those forces just as living tissue in general does.

I cite the author's summing up of his research:

"In these researches, Russian guinea pigs were injected with a 2 per cent solution of caffeine in physiological salt solution kept at body temperature. The lethal dose in general is .2 grams of caffeine each kg. of body weight.

"The animals acquire a tolerance up to a certain point to this poison, so that after some handling, the lethal dose became increased and larger doses could be given for several days, one after the other.

"Smaller doses up to .15 grams each kg. of the body weight could be given for months without producing noteworthy changes in the general wellbeing or without producing disease manifestations.

"If larger doses were given during a longer period, then the body weight diminished, the guinea pigs developed convulsions, paralysis of the hind legs appeared, and the hair fell out. All these symptoms gradually disappeared when no more caffeine was given.

"Only in the case of such guinea pigs in whom the above-stated symptoms of the general organism appeared could changes in the reproductive glands be shown, and these were of the degenerative types which regularly appear in the ovaries and testicles when they are injured. The ovaries were more sensitive and more easily injured through caffeine than the testicles. Animals in whom these degenerative changes in the reproductive glands appeared became sterile.

"But also those guinea pigs who for a longer or shorter period received small doses of caffeine, and in whose case no changes in the general organism and in the reproductive glands could be shown, were greatly injured in their reproductive function.

"In the case of the male, the sexual power and desire was not injured by medium doses of caffeine, but three-quarters of their offspring died in the first week after birth.

"If the females were treated with the caffeine before mating, heat appeared as usual, and they accepted the attentions of the male, but had far less offspring than when untreated by the caffeine. The diminution in fertility involved about three-quarters of the eggs of the caffeine-treated females.

"This injury of the ova appeared when the caffeine was given for only a few days before the mating."

Longevity and Nutrition

One of the favorite stamping grounds of statistical analysis has been to prove that longevity was a matter of heredity of germ plasm fundamentally independent of the environment. The reason that people died young, in the main and in the mass, was because they did not have the kind of germ plasm by which to live long, an obvious sort of conclusion since unless the germ plasm had the capacity to produce a long-lived individual, the long-lived individual would not exist. But the emphasis upon the germ plasm as the main and, perhaps, sole factor is open to all the objections inherent in this doctrine, namely the germ plasm can be destroyed, that it can be thwarted, and that its capacity cannot possibly be known except as it operates in an environment. Tons of statistics are not worth an ounce of experiment, and the ounce of experiment has recently been performed by H. C. Sherman and H. L. Campbell. "Four hundred rats, all of the same heredity and living under conditions alike in all other respects, were kept in about equal numbers on two different dietaries — both nutritionally adequate wheat-and-milk mixtures, but differing in the proportions of milk in the food mixture. Although the diet with the lower proportion of milk was definitely shown to be adequate, the animals receiving food containing the higher proportion of milk lived, on the average, 10 per cent longer — a significant gain in longevity. Critical examination of the results from a statistical point of view indicated that there was not more than one chance in a hundred that this result could have been accidental or due to the natural physiologic variability of the animals. The superior longevity induced by the improvement of the already adequate diet was further shown in the fact that much larger percentages, both of males and of females, attained more definite standards of longevity on the improved than on the original dietary. The investigators also point out that this gain in longevity resulted from a single and simple dietary improvement, and that it is altogether probable that the better of the two diets here studied is susceptible of being still further improved." This is a very much better way of understanding longevity than by studying tombstones and records without taking into account social conditions, such as diet, for certainly a superior diet is an environmental diet, since no individual by his germ plasm creates his diet.

III. *Experiments Tending to Show a Lamarckian Transmission of the Use of Intelligence.* I cite the following experiments with some degree of misgiving in these days when to be a Lamarckian is to confess oneself naïve and unscientific. I cite them because they are fundamentally in line with what the Freudians call "wish fulfillment."

The experiments of William T. MacDougall[11] are of great importance, and though they need verification by others, it seems to me that his work has been done in a fine scientific temper, even though he frankly is looking for proof of Lamarckian transmission of intelligence. Using rats of known stocks, he utilized ingenious water-land mazes, and trained the animals to circumvent electrically charged planks, to get at food, etc. This was carried on for many generations, and at the end, he believes that the descendants of the trained animals did significantly better than animals of similar stock whose ancestors had not been trained. Of great interest to the psychiatrist is that early in the experiment, there occurred what MacDougall calls an hereditary phobia for the disagreeable situation, one which balked the experiment for a long time. The only criticism I have to make is that MacDougall has not enough cases to be beyond statistical reproach. It seems to me that adaptation to new situations in which animals find themselves, for example such as the advent of man, must take place on the basis of some acquired-hereditary mechanism, some increase in skill and knowledge which is transmitted in the modification of germ plasm through the experience of the ancestors.

Of significance is the experiment of D. Carleton MacDowell[10], showing that toxic substances may injure the learning capacity of animals. He states, "An attempt was made to control or modify normal inheritance with particular attention to mental conditions as revealed in behavior. White rats treated with maximal doses of alcohol fumes daily for twenty-eight days before and during training took more time per trial in running a circular maze than did their untreated brothers and sisters. The criteria involving perfect trials give results that tend in the same direction as those given by the data on time, but they are less conclusive and definite. The treatment of the parents as well as the rats themselves caused no more modification in maze behavior than was found in the rats originally treated, namely, a tendency to retard learning; but the tendency with the small numbers involved is either on or below the borderline of statistical significance. A small but consistent modification of the maze behavior of the untreated offspring from treated parents was found; this appeared more clearly in the criteria from perfect trials than in the time per trial. Untreated rats from parents treated with mild doses showed no difference in their maze behavior from the controls. The following generalization is reached: Alcoholism in ancestors may modify the behavior of untreated descendants."

SOCIAL EXPERIMENTS WITH PLACED-OUT CHILDREN

Of more direct importance to us are those social experiments with placed-out children, which indicate that the children placed in foster homes tend to resemble their foster brothers and sisters more than they do the people to whom they are biologically related. Contradictory reports have emanated from the orphanages. The studies done in connection with these institutions have had in mind that the orphanages constitute a uniform environment, in which they test out the value of environment. Most of the work done has not taken account of the fact that the very earliest years are of fundamental importance; that most children come to orphanages with a mentality already stamped out by their early environment. Without citing the literature, it may be stated that some of the articles attempt to show that the uniform environment tends to bring about rather uniform results in the intelligence of the children, in that the brighter children slacken down in their I. Q.'s, while the less bright tend to come up. Other papers indicate that the uniform environment has no effect. I cite one of the latest pieces of work upon this subject and one which seems to me to have been made candidly, without prejudice, and with a sufficient number of cases, the monograph by Frank Freeman,[5] Karl Holzinger,[5] and Blythe Mitchell[5]:

This study, made under the auspices of the University of

Chicago, was a deliberate effort to discover whether the intelligence of the child is affected by the characters of the environment. They define intelligence very simply, as the quality of a person's behavior in dealing with intellectual problems. It is measured by the score which the individual makes upon adequate tests of intelligence. The tests used were the Stanford revision of the Binet-Simon Scale and the International Group Mental tests. Their idea was to compare persons who are alike in heredity, but who have been subjected to different environments, and, on the other hand, those who have diverse heredity, but have been under the influence of the same or of similar environment. The children tested were divided into groups, one a pre-test group who were children who had been given a Binet test before they were placed in their present homes. The authors summarize as follows:

"The main problem of this investigation was the measurement of the effect of environment upon the intelligence of foster children. The detailed procedure by which this measurement was made has been described in the foregoing pages. This summary includes only a brief statement of the more important comparisons made and the conclusions which seem to be warranted.

"1. A group of children were tested before placement and then retested after several years of residence in a foster home. A comparison of their ratings on the two tests gave evidence of a significant improvement in intelligence (as measured by intelligence test scores). A study of certain sub-groups showed that the children in the better foster homes gained considerably more than did those in the poorer homes. Furthermore, the children who were tested and adopted at an early age gained more than those adopted at a later age. These facts appear to indicate that an improvement in environment produces a gain in intelligence.

"2. A comparison was made between the intelligence of siblings (brothers and sisters) who had been reared in different foster homes. The correlation between their intelligence was found to be lower than that usually found for siblings raised together. The usual coefficient of fraternal resemblance is about .50, but it was found that for siblings separated before either of the pair was six years of age, the correlation was only .25. When the comparison was made for those whose foster homes were of different grade, the correlation was found to be only .19. These facts make it appear that a part of the resemblance between siblings reared together is due to the influence of a similar environment.

"3. A group of siblings was divided into two groups by putting into one group the member of each pair who was in the better foster home and into the other group the one in the poorer home. The mean I. Q. of the group in the poorer homes was found to be 86, while that of those in the better homes was 95. An analysis of the conditions of adoption made it seem unlikely that there was any marked tendency for the brighter member of a pair of siblings to be taken into the better foster home. A random formation of two groups from pairs of siblings would give groups of equal intelligence. The superior intelligence of the siblings in the better homes appears, therefore, to give evidence that the character of the home affects the child's intelligence to a marked degree.

"4. Two unrelated children reared in the same home were found to resemble one another in intelligence. The correlations between the intelligence of such unrelated pairs ranged from .25 to .37. This resemblance is probably due for the most part to the similarity of their environment.

"5. The available information on the own parents of the foster children indicated that a large percentage were of defective mentality. If heredity were the only factor in the determination of intelligence, it would be expected that their children would be decidedly below the average. It was found, however, that their mean I. Q. was practically equal to the standard for children in general. Only 3.7 per cent rated below 70, and these were those placed at relatively late ages. These facts seem to point quite clearly to the influence of environment upon intelligence.

"6. In the case of 26 children studied, both parents were rated as feeble-minded. If intelligence were inherited according to the Mendelian law, all of these children would be feeble-minded. It was found, however, that only four had an I. Q. below 70 and these only slightly below. The average I. Q. of 81 for these 26 children is higher than would be expected according to the Mendelian law, but is considerably below that of the entire group of children studied. These facts appear to indicate that heredity and environment are both influential factors in the development of intelligence.

"7. The school progress of the children studied compares very favorably with that of the children in several large school systems.

"8. In various groups comparisons were made between the intelligence of the children and the grade of foster home in which they had been reared. For the entire group of 401, the correlation between home rating and intelligence was found to be .48. The correlation between the intelligence of the children and the intelligence of their foster parents as measured by the Otis test was found to be .37. In the case of the children who had been tested before adoption, an initial correlation of .34 with home rating was raised to .52 after a period of residence in the foster home. These correlations would indicate that the character of the home is an important factor in the development of the child's intelligence.

"9. The influence of the home is further shown by the fact that there is a correlation between early placement and intelligence and a slight relationship between the child's intelligence and the length of time he has spent in the foster home.

"10. A large percentage of the children studied had parents who were morally defective. In spite of this poor heredity, however, few cases of serious misbehavior were found among the foster children. It seems probable, therefore, that environment has been an important factor in determining their conduct.

"11. In interpreting certain data of the study, it was necessary to know whether the apparent effect of good home environment could be accounted for by a selection of initially bright children by superior foster parents. The analysis of the data led to the conclusion that selection was not a large factor in the relationships. In the extreme cases in which the children were given a mental test before adoption, the correlation between this initial I. Q. and home rating was .34. In over eighty per cent of the cases no test was made before adoption. Furthermore, a survey of the circumstances of adoption indicates that the intelligence of the child is not usually taken into account as a major consideration. Finally, for certain groups in which it would have been least possible to estimate the intelligence of the child, the correlation with home rating is as high as for other groups."

If this piece of work is, upon analysis, discovered to be authentic, and I am frank to say that I am unable to judge because of an incapacity to deal by statistical methods with the data as presented and interpreted by the authors, then environment plays a rôle in the development of intelligence — a rôle of importance and one to be weighed in considering the case of each individual child.

IDENTICAL TWINS

Of interest is the experience with identical twins. Theoretically identical twins are what the term implies — identical in temperament and intelligence. That this is in large measure practically true is confirmed by daily experience. I cite the results which were obtained in two cases of identical twins reared apart and separated at a very early age; in the one case when two weeks old, in the other at the age of eighteen months. These sets of twins were very carefully and thoroughly studied. They are reported by H. H. Newman[14] and by H. J. Muller[13].

Muller's [13] twins, B and J, who were separated when they were two weeks old, were brought up by foster parents who did mining, logging and hauling. B often shifted territory and had only four years of formal schooling, including nine months in business college. The other twin's foster parents were in better financial condition. J was in the midst of many and lively people, went through high school and did summer work in a university. The health history is that B was the more sickly, had a poor infancy, and both girls have had tuberculosis. B had a nervous breakdown in her late teens, and J was on the verge of one. By the intelligence tests they score very superior intelligence and very closely together. The psychological tests for other states, the results for the emotions and will-temperament tests showed considerable difference in their personality. *There was, thus, almost no difference in intelligence but considerable difference in personality and emotional reaction.*

Newman's[14] twins were O and A. O's environment was more favorable; she was an only child and had a good social status. A lived in a crowded deteriorated district and got little attention, as the foster parents had four other children. The author made very many tests and states as follows: "By the Stanford-Binet test the difference in I. Q. was 12, which is considerably over twice the average noted in identical twins reared together. The difference in mental age was 23 months, which is nearly three times as great as the average of identical twins reared together. On the Thurstone Psychological tests A ranked .184, O .0697. In a group of 100 students O would be thirtieth from the top; while A would be thirty-second. These differences were maintained on the Otis Self-Administering Test, the International Test, the Stanford Achievements. On the Downey Individual Will-Temperament Tests the girls were very much alike. On the Kent Rosanoff Association tests the twins reacted nearly identically. In the Pressy X-O Tests for emotion the results were similar. In the Strong Vocational Interest Blank there was very much resemblance. The conclusion of this author is: "*The general conclusion might be that in this pair of twins differences in environment and training have been responsible for bringing about a significantly great divergence in intellectual, but that their temperamental, or emotion traits, have remained unusually similar.*"

So that of these two pairs of identical twins the environment may be accused of bringing about differences in emotion in one set and difference in intelligence in the other. The two sets of twins may be used to cancel one another, and the conclusion reached that nothing has been proven whatsoever; or it may well be argued that both intelligence and emotion are altered even in identical twins by differences in environment.

Medical men from earliest days have believed that the environment may bring about changes in personality, intelligence and the like. I need only cite Tredgold as, so to speak, representative of a very large group. In an article entitled "Educability and Inheritance," he states as follows: "To summarize the chief points regarding educability we may say:

1. The degree of educability varies in different individuals, being determined by an innate potentiality for mental development which cannot be exceeded; this applies equally to what is known as general ability and to special aptitudes. The full realization of this potentiality necessitates an optimum environment, under which term is included the stimulus of education. Since the environment never is perfect, it is doubtful whether any individual attains the full development of which he is inherently capable."

Until they fell under the spell of the biologists, medical men believed that environment might do almost anything to individuals, including the creation of inferior stocks which persisted as inferior. As a group, biologists regard this as a naïve conclusion, and statisticians complete the rout of opinion on this point. But with the advent of the knowledge of the internal glands and the utilization of experimental methods to change germ plasm activities, it has come to pass that the medical man no longer need apologize for believing that environment in one form or another, whether it be alcohol, syphilis, lead, or even poor social cultural conditions, may interfere with the potentiality of the hereditary substance, so that an individual does not realize his full capacity and may present himself as defective because he remains incompletely evolved. He may even believe, on the basis of authentic experimentation done by biologists and medical men, that the descendants of an injured individual may continue injured for several generations; that there may exist disease of the germ plasm which persists for several generations, goes on to recovery or destruction, just as there are diseases of the individual which have a time curve of onset, course, recovery or death.

The belief of a great many psychologists, biologists and medical men that intelligence and mental development are fundamentally independent of environment may be compared to the belief of those philosophers of the Berkeley school, who were finally led to believe that everything that seemed to exist was created by their consciousness, and reached the absurdity of solipsism. In neither case do the individuals holding these beliefs live up to them. The philosophers of the idealist school act as if people, books, chairs were real things and had an independent existence. They behave exactly like those individuals who naïvely accept the reality of the things they think they see and hear. A philosopher of this school buys automobiles, courts his lady-love, eats his meat and drinks his coffee in about the same way and with the same show of belief in their reality as does the man who has never heard of Berkeley or of any philosopher. Similarly with the psychologists who like to say that intelligence is dependent upon heredity rather than in any appreciable degree upon environment. *They act as if it were entirely dependent upon environment.* They take extreme care that their children are born properly. They have the best obstetricians that they can afford. They see to it that their children are given the best hygienic conditions possible in their early years. They follow every development in medical science closely. Their children get cod liver oil, green vegetables and sunlight. They are careful that healthy people surround them; they guard them from infection and from injury; they start to teach them good English early. They send them to the best schools within their means, often enough to private schools. They exercise more or less care as to the nature of the associates of their children and deliberately avoid the contamination exercised upon the young children by bad example. They would be hurt beyond measure if they could not afford to send their child to a summer camp or to give him plenty of rest and recreation. In other words, they act as if all of these things were of fundamental importance to the development of the intelligence and the personality of the child, which indeed they are.

As a working hypothesis for medicine and for society, in the understanding of feeble-mindedness, the theory that the gene needs a genial environment and that the gene can be injured by a non-genial environment, is here set forth as the basis of future work on feeble-mindedness. I do not deny that the interior forces we call heredity are of high importance. I state that the gene is constantly bombarded by the environment, constantly under its influence, and, however stable it tends to be, is susceptible to changes in its environment. This working hypothesis states that the feeble-minded, on the whole, resemble individuals who have been hurt by the environment, and that even where feeble-mindedness occurs for generation after generation, it is the result of environmental injury making itself felt through several generations. The mechanism of this injury may be a single blow to the germ plasm, the effects of which persist for several generations, or it may be a constantly bad environment operating uninterruptedly upon the germ plasm of each generation. There may even be such a thing, as is indicated by the experiments of

MacDowell and MacDougall, as a hereditary learning capacity, injured or increased by environmental influences. The separation of the germ plasm from the environment is a biological fiction without reality. The conception of the germ plasm and environment as in constant interrelation can be made evident to any one who has operated upon a testicle or ovary and watched the blood stream pass through these organs carrying with it nutrition, adequate or inadequate, and infection, lethal or non-lethal.

This hypothesis does not directly interfere with any program which will have for its purpose the sterilization of the known feeble-minded. That this is possible in the present state of our social development belongs in the same type of belief that morals can be improved by legislation. Those who believe it think that their theories will be accepted by the mass of humanity and that the reproductive instincts can be controlled by intelligence. It may be that in some far distant future the mass of mankind will consent to eugenic marriages and eugenic sterilization; this does not seem at all possible at the present time. The experiences with prohibition might convince any socially observant person that sexual bootleggers would nullify any sterilization eugenical program.

I suggest to some great foundation that it stop subsidizing researches which tell us the number of feeble-minded found in any community or town, that it no longer subsidize the kind of statistical gossip which at present passes as one of the phases of eugenics. Nothing is gained by the multiplication of uncertain researches, except, perhaps, to keep alive the interest in the subject. Let us subsidize instead the removal as soon as born of children who come into low-grade families, perhaps in families where the advent of the new child is a great burden and where the parents will willingly give it up for the sake of having it adequately cared for. Let the children thus experimented upon be removed to high-grade homes or placed under high-grade environmental conditions. A number of children sufficient for such a study could easily be determined by the statisticians. Then let good nutrition from the earliest days, good example and devoted education do their best. I believe that such an experiment would lessen the talk about heredity and increase the evaluation of the environment in the development of the intelligence, the character and the personality of human beings. It would be shown, I believe, what must already be apparent to those who have followed the later development of biological science: That germ plasm is a living tissue imbedded in a mass of living tissue with which it constantly interacts; that the whole organism is a bit of organic matter embedded in a huge environment which continually influences it, making for good or for ill; that these environmental forces reach through the bodily tissues and into the germ plasm, disturbing its stability, capable of destroying it, injuring it and of improving it. It seems almost presumptuous to think that the tiny mass of germ plasm of each individual is an independent entity, since all the germ plasm in the world in its sum total compares with the mass of the environment as a drop of water in the Atlantic Ocean.

I offer as a working hypothesis for psychiatry and for biological medicine the concept that the most practical working field for us is the influence of environment upon the mind and the personality of the human being. This environment needs to be studied in its minutest phases; uterine conditions ought to be a field for research, and the vaginal smear method of Stockard and Papanicoloau offers at least a hint as to how this research can be conducted. A record of intra-uterine conditions is possible; at least a more careful study of such conditions can be undertaken. Within this environment the earliest and most profound influences are asserted upon the developing individual, and yet almost no research has been carried on in this field. A careful study of nutrition before pregnancy, of the effects of infectious diseases upon ovulation needs to be instituted. It is quite possible that a defective individual occurring in a normal family may represent not a hidden Mendelian character of altogether hypothetical origin, but the effect of some passing infection upon germ plasm. The influences of the crowding of the slums, under-nutrition, infectious diseases, work in factories, and poor hygienic conditions is a more profitable study, in my opinion and according to this working hypothesis, than studies made of defective communities existing under traditions and actual physical environments which might in themselves explain in some measure their defectiveness. While alcohol and syphilis may not be the blastophthoric forces which injure germ plasm, the case certainly is not closed against their effects, and we need not confine ourselves to the mere physical conditions which surround groups of the population in an effort to discover the blastophthoric forces. The day is past when emotional states can be dismissed as merely mental. We know that a great emotion is a bodily event reaching through every tissue and changing the chemistry of the entire organism in some measure. In this field, as in every field in which the living creature is studied, the sum total of the forces operating on the human being must be taken into account. Heredity is the name given to an interior force, or set of forces, which operates fairly stably but is constantly influenced by an immense number of other forces. To explain the individual by this inner force alone is to leave out of account the rest of life in all its varied and potent aspects.

NOTE: Since this MS. was sent to the editor there has appeared H. S. Jennings' magnificent book, "The Biologic Basis of Human Nature." To those who wish to obtain a comprehensive view of the whole subject of heredity and environment this brilliant summary by a great scholar is most heartily recommended.

REFERENCES (*Chapter XI*)

1. BAGG, HALSEY J.: "Disturbances in the Malian Development Produced by Radium Emanation, Eugenics, Genetics, and the Family. Vol. 1, Williams and Wilkins, page 150 ff.
2. BANTA, ARTHUR, and BROWN, L. A.: "Some Data on Control of Sex in Cladocera." Eugenics, Genetics and the Family. 2nd International Congress of Eugenics, Vol. I, Williams & Wilkins, Baltimore, 1923, pp. 142–149.
3. CASTLE, W. E.: Eugenics. Encyclopedia Brittanica, 13 ed. "Varieties of White Rabbits." Journal of Heredity, Vol. XV, p. 218, 1924.
4. DAVIES, STANLEY P.: "Social Control of the Feeble-minded." 2nd ed. Now in the hands of the Crowell Co., Publishers.
5. FREEMAN, FRANK; HOLZINGER, KARL; and MITCHELL, BLYTHE C.: "The Influence of Environment on the Intelligence, School Achievement and Conduct of Foster Children." Offprint from the 27th Yearbook of the National Society for the Study of Education, 1928, Part I: "Nature and Nurture: Their Influence upon Intelligence."
6. GODDARD, HENRY H.: "The Heredity Factor in Feeblemindedness." Institutional Quarterly (Illinois), Vol. IV, No. 2, June, 1913.
7. GUYER, M. F., and SMITH, E. A.: "Further Studies on Inheritance of Eye Defects Induced in Rabbits." Journal Experimental Zoology, 38–449, January 5, 1924.
8. ILJIN, N. A.: "Transactions of the Laboratory of Experimental Biology of the Zoological Park of Moscow," Vol. I.
9. JENNINGS, H. S.: "Prometheus, or Biology and the Advancement of Man." New York, E. P. Dutton & Co., 1925.
10. MACDOWELL, D. CARLETON: "The Genetic Significance of the Alcoholic Treatment of White Rats." Eugenics, Genetics, and the Family, Vol. I, Williams & Wilkins Company, Baltimore, p. 168.
11. MCDOUGALL, WILLIAM: "An Experiment for the Testing of the Hypothesis of Lamarck." British Journal of Psychology, Vol. XVII, 1926–1927, pp. 267–304.
12. MULLER, H. J.: "Measurement of Gene Mutation Rate in

Drosophila, its High Variability and its Dependence upon Temperature." Genetics 13: 279–357, July, 1928.
13. MULLER, H. J.: "Mental Traits and Heredity." Journal of Heredity, 16:12, 1925, pp. 433–448.
14. NEWMAN, H. H.: "Identical Twins Reared Apart." Journal of Heredity, 20:2, February, 1929, pp. 49–64.
15. SHULL, A. FRANKLIN: "Sex Determination in Rotifers." Eugenics, Genetics, and the Family, Vol. I, Williams & Wilkins Company, Baltimore.
16. STIEVE, PROF. H., of Halle: Die Wechselbeziehungen zwischen Gesamtkörper und Keimdrüsen.
Mastversuche an männlichen Gänsen. Arch. f. Entwickelungswech. Bd. 52, 1922, pp. 313–362.
17. STOCKARD, C. R.: "Further Studies on the Modification of the Germ Cells in Mammals." "The Effect of Alcohol on Treated Guinea Pigs and Their Descendants." Journal Experimental Zoölogy, 26, pp. 119–226, 1918.
18. TREDGOLD, A. F.: "Mental Deficiency," pp. 17–22, 36–37, 40, 42, 63, 65–68 (charts) 90. William Wood & Company, New York, 1908.
19. WALLIN, J. E.: "Studies of Mental Defects and Handicaps." Miami University Bulletin, series XXII, 5 January, 1924.

MONGOLISM AND ITS TREATMENT

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During the years 1920 and 1921 it was my great privilege to meet frequently with Dr. Walter E. Fernald and cooperate with him in the examination, study and treatment of many of his charges, especially the Mongols under his care at Waverley, Massachusetts. Nothing could be more courteous and helpful to one who was making a study of these cases than the attitude of Dr. Fernald toward the writer. He organized clinics and demonstrations, placed many members of his staff at my disposal and was always ready to stop any work upon which he was engaged, to be present and discuss from all angles the most interesting problem cases that presented themselves in the endocrine field. He was constantly on the alert for new methods of diagnosis — for new methods of treatment — in short, his aim in life seemed to be the amelioration and betterment of the poor defectives in his care. How well he succeeded is to be seen in the development of means and methods in the modern care of deficients and defectives. Practically all of these modern methods had their origin in Fernald's work, and Waverley under him became the Mecca of many pilgrims. I wish herewith to acknowledge my appreciation and gratitude to my friend, Walter E. Fernald, for the many favors, the extreme help and the stimulus to investigation that contact with him stirred in me. The following thesis on Mongolism was a direct result of such contact, and anything that may prove meritorious in it ought to be credited to him.

The examination of many Mongolian defectives gives as a result an impression that there are several characteristic anomalies presented by the majority — deficiencies and disproportions in growth of the skeleton, the skull and the different skeletal units; the sexual and genital difficulties, such as undescended testicles, tardy menstrual flow or even amenorrhoea; disturbances in the optic chiasm as evidenced by grayness of the optic discs, usually on the temporal sides; the redness and oedematous swelling of the retina surrounding the optic nerve head; the frequent occurrence of strabismus and the constant disturbance of the pharyngeal mucous membrane with chronic pharyngitis. One is tempted to look for some one cause or factor which might be influential in producing many, if not all, of these conditions. The anterior lobe or "pars buccalis" of the hypophysis cerebri comes very close to furnishing us with this necessary efficient factor. By its physical anatomical situation, it can produce pressure upon the optic nerve and chiasm, and upon the oculo-motor nerves; and by its metabolic systemic influence it is known to produce growth of skeleton, development of the genitals, and to have a direct bearing upon the activity of the buccal and pharyngeal mucous membrane, from which indeed it is originally formed. Should this causal relationship between the anterior lobe of the pituitary body and the Mongolian characteristics be true, then we ought to find frequent evidence of it in X-ray examinations of the sella turcica. In many such examinations, it will be noted that the anterior clinoid processes in the Mongolian sella are considerably higher arched than the normal and that the sphenoid sinus lacks considerably in development, so that the apparent anterior chamber of the sella turcica is enlarged.

In forty-five out of sixty non-selected cases of Mongolian idiocy, including twenty of my own, the radiograph of the skull showed a peculiar change from the normal in the anterior portion of the fossa pituitaria. This change consisted in a space under the anterior clinoid processes, inferior and posterior to the olivary process and optic groove, which communicated directly with the anterior portion of the fossa itself. From our knowledge, more or less exact, of the influence of the anterior lobe of the pituitary on growth and genital development, this Roentgen-ray finding is of considerable interest. Its deficiency causes subnormal and disproportionate body growth coupled with lack of genital development. Thus in boys, undescended testicles are quite frequent and in girls abnormalities of the genitals with tardy menstrual flow or even complete amenorrhoea are the rule. The intimate relationship which in early life exists between the anterior hypophysial lobe and the pharyngeal glandular elements is also recognized. Furthermore, with such abnormalities, involving at times the optic groove, eye symptoms should be of frequent occurrence. These findings, as a result of anterior lobe pituitary disturbance, closely simulate the symptoms and signs in Mongolism. To take as an example merely the findings of ophthalmologists as to optic nerve disturbances in Mongolians, we quote C. A. Oliver: "The optic discs in a number of cases are unequally grayed, especially in the deeper layers and to the temporal sides; the substance of the disc in the great majority of cases, especially where the retinal and choroidal disturbance was not pronounced, is apparently edematous; the retina surrounding the optic nerve head is edematous and swollen in many of the cases; examination for visual field disturbances could never be properly carried out through lack of cooperation."

Theoretically, therefore, disturbance of the anterior portion of the pituitary body might readily produce many of the symptoms shown clinically by Mongolian idiots. It is therefore suggested that every necropsy examination in cases of Mongolian idiocy should include a careful examination of the pituitary gland, notably in its anterior portion. Should such an examination eventuate in a corroboration of antemortem findings, perhaps a rational treatment might be forthcoming for these cases.

It is important to observe, nevertheless, that these findings of the anterior clinoids and optic groove are seen occasionally in persons who have not Mongolian characteristics, but who have isolated symptoms and signs due to anterior lobe disturbance, namely, growth and genital developmental abnormalities.

Many of my critics have stated that I declared this condition of the sella to be pathognomic of Mongolism. In contradiction, let me say that in the original contribution I distinctly stated that this picture is one occasionally seen also in persons who have *not* Mongolian characteristics. Later authors have found that a majority of Mongolians have such a sella turcica as described by me and suggestively state further that the non-Mongolian children who possess it lose the characteristic form later on in life while the Mongolians in large majority seem to retain it. That is my impression also.

Because of the suggestive relationship of the Mongoloid disturbances with changes produced by anterior lobe pituitary deficiency, and of the skull changes in the vicinity of the anterior portion of the pituitary gland, treatment was inaugurated some ten years ago with anterior lobe pituitary substance as the main and specific element. This was combined with thyroid and iodine therapy and whole gland pituitary administration as well. The combination for a two-year-old patient was about as follows:

Thyroid (Burroughs Wellcome), grain one-tenth to grain one-fourth daily.
Sodium iodide, saturated solution, two drops daily.
Pituitary substance (Armour): one capsule containing of the anterior lobe grain one to grains two, and of the whole gland from grain one-tenth to grain one-fourth; a capsule two to three times daily three hours after meals.
Later on, hypodermatic injection of antuitrin (Parke Davis), one-half ampoule twice weekly may be added.

As the child grows older, all of these are gradually increased to tolerance limit, and the antuitrin to one whole ampoule three times weekly.

Under this treatment, one first noticed the change in the skull formation, the bridge of the nose coming forward and higher so that the slant of the eyes was gradually diminished; also the back of the skull gradually rounded out, so that rotundity took the place of square headedness. Gradually also the mental state progressed, so that instead of being merely imitative, the child attained some degree of initiative, with better coördination, better concentration and memory and could be taught. At the same time a small degree of social adaptation became possible. With these changes, the child would usually become somewhat keyed-up, moderately excitable and unruly if kept among the untreated, easy-going Mongolians. The reason for this change was probably the recognition on his part of a growing difference between himself and his one-time companions. As a result, his teacher invariably stated that the child was growing unmanageable and needed stricter disciplinary measures. Indeed, these school reports in many cases had so much weight with the parents who thought of course with the teacher that they connoted a change for the worse and were due to the treatment, that the treatment was many times discontinued. Then the child would revert to the old, quiet, manageable state of the usual Mongolian. At times, of course, the medication is too stimulating, too much thyroid producing excessive nervousness, sleeplessness and irritability; too great pituitary administration giving rise to head-

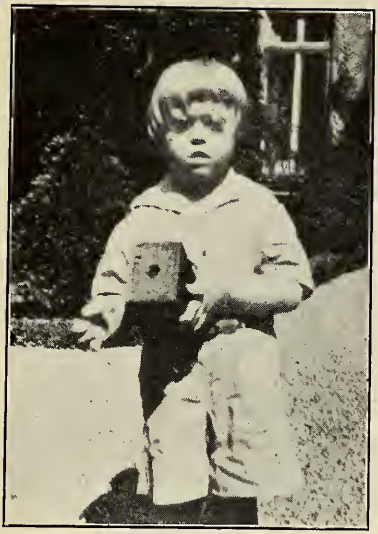


Figure 1

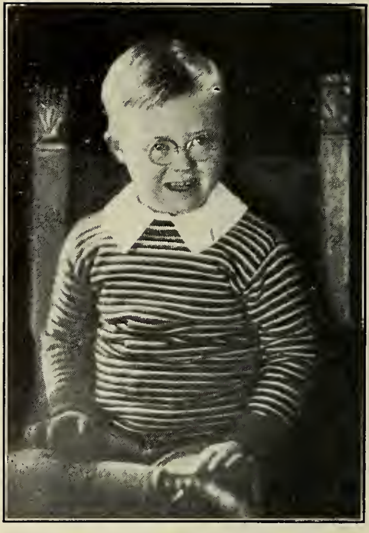


Figure 2

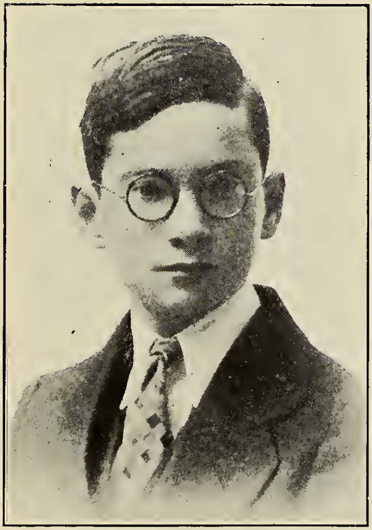


Figure 3

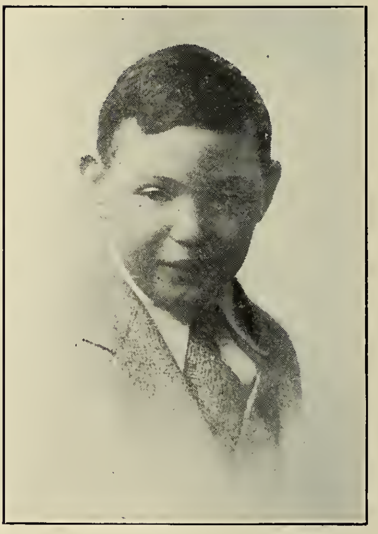
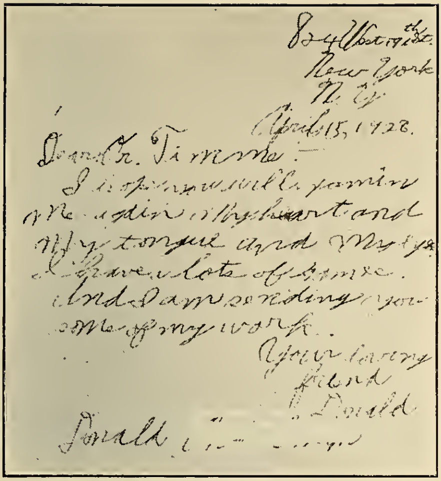


Figure 4

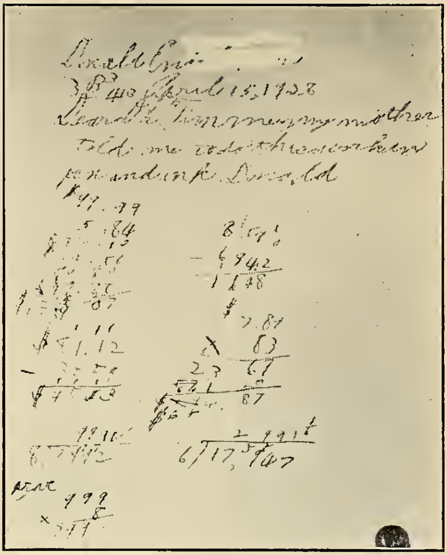


84 West 71st St.
New York
N. Y.
April 15, 1928.

Dear Dr. Timme: —
I [illegible] you will [illegible]
me [illegible] my heart and
my tongue and my eyes.
I have lots of time.
And I am sending you
some of my work.
Your loving
friend
Donald

Donald [illegible]

Figure 5



Donald [illegible]
[illegible] April 15, 1928
Dear Dr. Timme my mother
told me to [illegible]
pen and ink. Donald

Figure 6

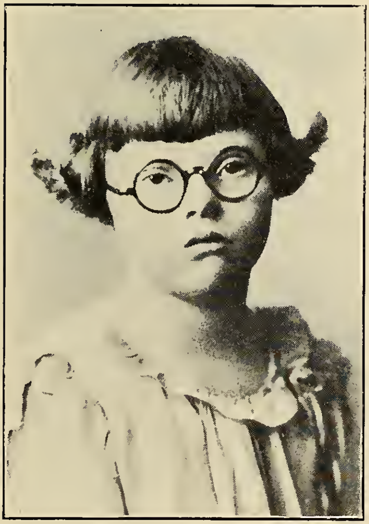
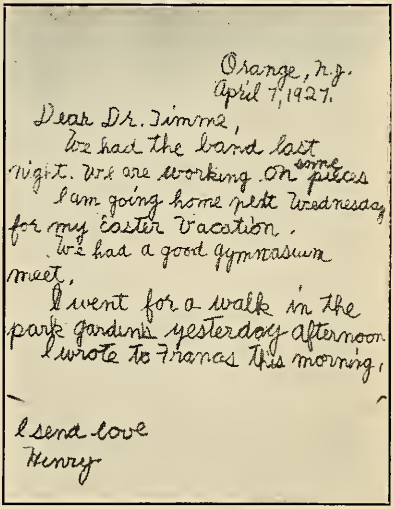


Figure 7



Orange, N. J.
April 7, 1927.

Dear Dr. Timme,
We had the band last
night. We are working on some pieces
I am going home next Wednesday
for my Easter Vacation.
We had a good Gymnasium
meet.
I went for a walk in the
park gardens yesterday afternoon
I wrote to Francis this morning.

I send love
Henry

Figure 8

ache, dizziness and nausea; and the iodine its usual disagreeable consequences; but if care be taken to adjust, from time to time, those dosages, very little untoward disturbances take place. The antuitrin injections occasionally cause slight redness and swelling, but rarely so. They are followed at times with a flushing and redness of the face and a feeling of fullness in the head which is uncomfortable to the patient and causes him to complain, but their effect is quite evanescent. But quite apart from these treatment episodes, the child does become more and more of a problem as he progresses — if kept with unprogressive Mongolians — and care and intelligence must be exercised in explaining this to both teacher and parents.

The important thing to remember about the treatment is the necessity for its persistence year after year — it may even be considered in the light of a food — a biochemical one — and just as important as are vitamins to normal health. During the summer months we usually diminish the quantity of administration either by lowering the individual doses or by giving the glandular products for three weeks a month only. Many of the patients, living at great distances, can very readily be treated by their own physicians at home if these be instructed fully and carefully as to the dosage and care in giving the necessary medicaments. But at least twice yearly should such patients be brought in for personal observation and checking-up. The urine should be examined during pituitary medication, especially for albumin and casts, as irritation may occur in the genito-urinary tract; an analysis every few weeks is therefore advisable.

To illustrate the results obtained by this treatment I shall show some of my patients and their work. Figure 1 shows one of our Mongolians some years ago. Figure 2 shows him at the present time. The change in features needs hardly to be commented upon. Figure 3 shows a boy, now fifteen years of age with hardly a trace of his original characteristics present. Figure 4 shows a boy of eight years, still retaining many Mongolian appearances but who has made such remarkable advance in mentality that his intelligence quotient, taken several times by different examiners is between 90 and 95 per cent! This is something heretofore unrecorded for Mongolian *idiocy!* This boy can do mental arithmetic of such character as this; seven plus five plus six minus four plus nine minus eight and multiply the answer by three; and the answer is forthcoming as soon almost as the last number of the problem is uttered. He can do multiplication and division, and a sample of his work is shown in Figure 6. A specimen of his letter writing (original — not from copy or dictation) is seen in Figure 5. This boy was on treatment from the first year of life continuously to the present time. Figure 7 shows a girl of twelve and a half years of age who, while poor at figures, reads excellently well, and comports herself among normal children and adults in a manner commensurate with her chronological age. She has poise and presence. Figure 8 shows an original letter of the patient seen as Figure 3. This patient is also poor at figures, but excellent in poise and bearing, writes and reads very well and is in a fair way to become self-supporting if necessary. He was perhaps not a full-fledged Mongolian when first treated, lacking several of the characteristics, but was a border-line case. The others of the patients described were all typical out-and-out Mongolians with all the stigmata.

It is my opinion, in closing, that the inefficiency of the anterior lobe of the pituitary gland (pars buccalis) is one of the important factors which produces Mongolism. Perhaps it is not the only one; and what is certain also is that the glandular products that we use in treatment are only moderately effective and do not represent the full value of the anterior lobe secretion; but that in spite of these limitations this treatment represents an advance in our therapy of the unfortunate Mongolians.

REMARKS ON THE PATHOLOGY OF THE FEEBLE-MINDED

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and

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Summary

a. Scope of the Waverley Researches in the Pathology of the Feeble-minded;

b. Advances in the pathology of the feeble-minded since the publication of the Waverley Researches in 1921.

In 1913, under the auspices of the Massachusetts School for the Feeble-minded, now the Walter E. Fernald School for the Feeble-minded, a series of systematic scientific researches into the pathology of the feeble-minded was conceived and work for their execution inaugurated by Elmer E. Southard and Walter E. Fernald. This combination of authors: Dr. W. E. Fernald, eminent clinical master in the examination and treatment of the feeble-minded, and Dr. E. E. Southard, artist in neuropathology and thinker at large in psychiatry and in general as well as medical science, was a peculiarly happy one. With the aid of their collaborators, they produced two volumes under the caption of Waverley Researches in the Pathology of the Feeble-minded. These volumes were published as memoirs of the American Academy of Science. The first series, with Dr. Annie E. Taft as collaborator, appeared in 1919 as Volume XIV, No. II; and the second series, with Dr. Annie E. Taft, Dr. Myrtelle M. Canavan, and Dr. Oscar Raeder as collaborators, was published in September, 1921, as Volume XIV, No. III, of the Memoirs of the Academy. This comprehensive work was conceived with the idea of working up a large series of feeble-minded cases, tentatively set at fifty, with clinical and pathological correlations which could be used as a basis for drawing some general conclusions on the problem of the feeble-minded which looks so large today as a social evil. In the first chapter of the first series, the world's work in pathology of the feeble-minded was oriented and brought up to date, and an extensive programme was organized to carry the work forward. Material has since been collected for the third, fourth, and fifth series of ten cases, and much histological work of the third series has been completed. This work, though tedious and of necessity slow and time-consuming, should nevertheless be carried on to the goal set for it by the authors.

In this work, Fernald and Southard were the first to attempt to match testable mind with measurable brain by applying psychological tests of Binet and Simon as developed by Yerkes, Healy, Terman, Kuhlman, and others, to a large series of cases carefully studied clinically by the method of Fernald (Fernald's ten point clinical examination), and extensively examined neuropathologically. In all these cases, which had been completely examined clinically and followed through their course, a complete autopsy was performed, and the material of the central nervous system was studied most minutely. From each hemisphere, twenty blocks were selected from different areas according to Southard's method. Each of these blocks was in turn divided into several smaller blocks, which were then subjected to various staining methods, such as the Nissl cell stain, the Bielschowsky silver impregnation stain, fat stains, and finally Weigert's myelin sheath stain. After sections from all these blocks were examined, a critical summary of the findings was made in each case, and then the cases were reviewed in relation to each other. Furthermore, large sections were made for the study of fiber parts, and sections of the cerebellum were studied. The results of these studies on the first two series have been published. A particularly striking plate was added in the second volume which showed a comparison between the first twenty cases arranged according to their intelligence level in one row, and according to their relative evaluation from an anatomical standpoint in a parallel row. This indicated that in a general way the brains which showed the highest degree of anatomical normality also had functioned best as tested by the psychological and other clinical examinations; and the small, simplified brains also correspondingly showed the lowest degrees of intelligence. There were, however, several noteworthy exceptions; one, Case 3, in which a small brain of rather simple pattern showed a comparatively high intelligence level; and on the other hand, page 14, a large brain with fairly complex evolutions and fairly normal-appearing physically, showed a comparatively low degree of intelligence. This demonstrates clearly that another factor (or factors) not demonstrable by the histopathological methods above delineated, plays an important rôle in the function of the brain cells.

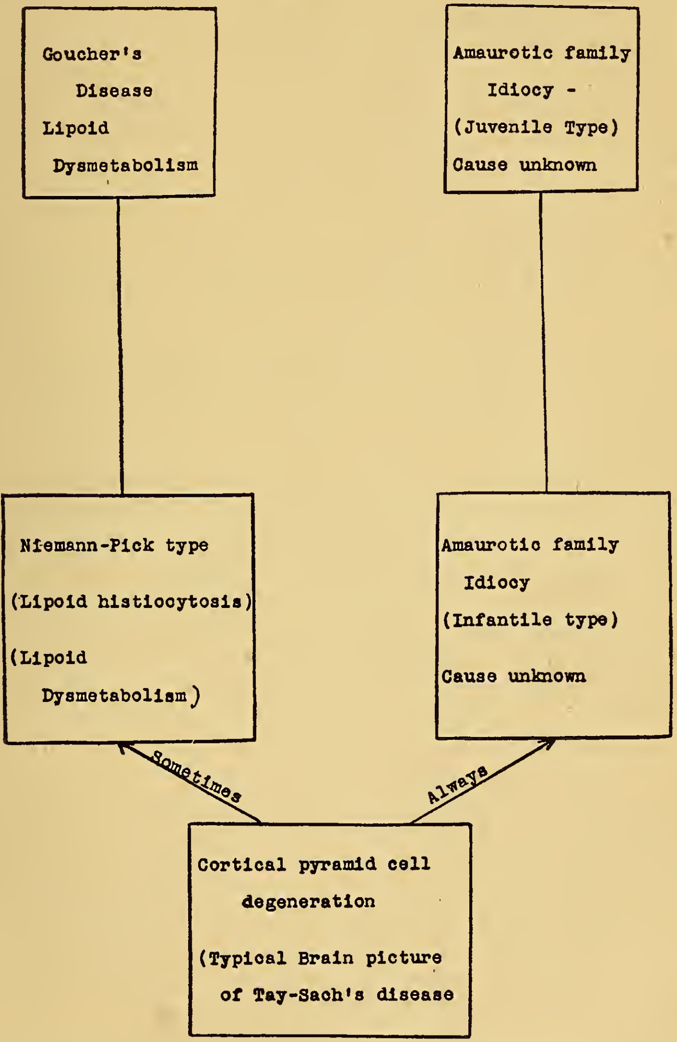
Since the publication of the above-mentioned two volumes of the Waverley Researches, no evidence of any concerted attack on the neuropathology of feeble-mindedness has appeared. There have, however, been some notable individual contributions on specific cases of feeble-mindedness, particularly on amaurotic family idiocy and Mongolian idiocy. The most important discovery has been that in regard to the former. In this regard, certain investigations and findings have shown that it is possible that amaurotic family idiocy is simply a by-product in a general disease of the whole organism which is in the nature of a dysmetabolism. Bielschowsky[1], 1928, has summarized these studies in an extensive article entitled, "Amaurotic Idiocy and Splenohepatomegalie with Lipoid Cell Infiltration."

In 1914, Niemann[2] reported a peculiar disease in an infant girl of eighteen months, which showed some points of resemblance to Goucher's disease but which was clinically different. Later on, other cases were reported, all in infants. Still later, Pick[3] studied some cases of this type and carefully differentiated this condition from Goucher's disease. Goucher's disease, it will be recalled, is characterized by enlarged spleen and liver, with an infiltration of large mononuclear cells of an endothelial type, so-called histiocytes, which are characterized by an accumulation of a lipoid substance in their cell bodies. From their appearance they have been called foam cells. These foam cells with lipoid deposits are found in the liver, spleen, lymph glands and bone marrow. Chemically it has been definitely determined that the lipoid substance is kerasin. The onset of Goucher's disease occurs usually before the age of twelve years, runs a chronic course, even to old age, with little interference with general health. The Niemann-Pick type of Goucher's disease, on the contrary, is a condition that arises in the early months of life, runs a rapidly progressive course, and ends lethally usually before the end of the second year. In this condition, we have the infiltration of the lipoids not only limited to the tissues mentioned in Goucher's disease, but flowing over into practically all tissues of the body, even the cartilage cells. This invasion becomes so extensive that there is a complete suffocation of the functions of the vital organs. The children attacked show a rapid decline, both physically and mentally. They are unable to sit up even at the age of twelve or fourteen months. There is an early enlargement of the abdomen, and they show a pale brown discoloration of the skin; the liver and spleen are enormously enlarged, and there is a slight leucocytosis, as high as 20,000. Apt and Bloom[4] stated that blood examinations were made in four cases and that in three of them there was a definite increase in cholesterol and fatty acids, while in the other the lipoids were at the upper limit of normal. Bloom and Kern[5], 1927, showed that the stored substance in the spleen of lipoid histiocytosis (Niemann-Pick type) is mainly a phosphotid. Pick regards this disease as a disturbance of the phosphotid and especially the lecithin metabolism, in contradistinction to the cause of Goucher's disease, which is a metabolism disturbance caused by a kerasin which is a galactosid from brain substance.

Recently, Oberling and Woringer reported some cases in which there were four children of the same family who died one year after birth and all four showed typical enlargement of the liver and spleen, and in two cases the diagnosis Niemann-Pick disease was verified by pathological examination. They pointed out that in some of their cases the typical brain changes of amaurotic family idiocy were found. This had never been shown in Goucher's disease of the adult type. These cortical changes will be described below. It will be seen, therefore, as shown in the accompanying figure, that there are two forms of Goucher's disease: one, the adults', known to be a disturbance of lipoid metabolism; and the infantile type of this condition, which is probably also a disturbance of metabolism, the exact nature of which has not yet been verified. We have corresponding to these two conditions, an amaurotic family idiocy of the juvenile type and described by Spielmeyer and Bielschowsky, which runs a protracted course and resembles somewhat the course in Goucher's disease, and an infantile type of amaurotic family disease proper which runs an acute course in early infancy, with blindness, dementia, and death, corresponding to the Niemann-Pick type. Now it has been shown by Oberling and Woringer that the cardinal symptoms of Tay-Sachs' disease occur in some cases of the Niemann-Pick type of Goucher's disease. It begins to appear, therefore, that the types of amaurotic family idiocy are also due to a metabolic disturbance, probably of the lipoid metabolism. It is a relatively new fact that certain definite disease pictures are continued by lipoid dysmetabolism, just as diabetic conditions are caused by a carbohydrate dysmetabolism. We begin to speculate what light, therefore, the study of diabetic children who by virtue of the discovery of insulin are now for the first time growing to adulthood, may throw upon this problem. In the article of Oberling and Woringer as quoted above by Bielschowsky, extensive cortical changes in those cases of Pick's disease which showed the cardinal symptoms of amaurotic family idiocy were described. The changes were especially marked in the parietal and occipital areas of the cerebral hemispheres, but nowhere was the cortex entirely unchanged. The disease process was found to be localized more or less to the third layer of the cortex, and the large and medium-sized pyramids were especially diseased. There was a marked lack of contrast in staining between the cell bodies and their prolongations in the affected pyramids. This could be seen by low magnification. Many showed the picture of Nissl's chronic cell degeneration; others were vacuolated. When the vacuoles were small and numerous, the cell assumed a sieve-like appearance. When one large vacuole formed, it occupied the cell body entirely and the nucleus was pushed aside. In this event, the cell body had a swollen appearance. Often the vacuoles penetrated the cell processes and caused the latter to resemble in appearance a string of pearls. Very little neurogliosis was found. It was possible to notice a diffuse increase in the glia. The well-known changes incident to neuronphage were never seen. Furthermore, it was ascertained that a cytolosis of the ganglion cells never occurred, but that the markedly changed cells continued to remain as if mummified. The cells of the basal ganglii and the Purkinje cells remained unaffected. It was the cerebral cortex alone, as has been said, which was diseased.

A great deal of interest has been shown in the past few years in the study of Mongolian idiocy. Extensive monographs, mostly of a clinical nature, have found their way into the neuropathology of this peculiar idiocy. Van der Scheer[7] has issued a pamphlet in which he attempts to establish the cause of Mongolian idiocy on the basis of a mal-development beginning in early foetal life. The principal conclusions are that Mongolism belongs to the morphological series of malformations in which the picture is controlled by median skull defects; secondly, that all anomalies can be explained as a result of deficient size of the amniotic sac which produces its most harmful effects in the sixth and seventh weeks of foetal life. The amniotic defect arises from faulty implantation in an abnormal uterine mucosa, according

Fig. I.



to this author. The manifestations that become evident in later life, as the metabolic disturbances, the trophic, the dystrophies, and the abnormal psychic phenomena, he thinks can be explained by hypoplasia of the diencephalon, with defective development of the centres of the vegetative autonomic nervous system. In the study of the neuropathology of Mongolism, Davidoff[8], reports results in a careful and accurate histopathological examination of ten cases. Besides finding a paucity of cells in the cortex in general, he makes the interesting new observation that the pyramids of the third cortical layer are especially deficient in this disease also, this having been shown to be the case in general states of feeble-mindedness. As to the cause of this paucity of cells, the author examined into the nature of the content of numerous gitter cells found, and by special staining showed that the granules of these cells stood the myelin reaction. He concludes, therefore, that there may have been a sufficient number of the pyramids originally formed but that a degeneration may have taken place in the first months of life since two of his cases were less than one year old. In a third and older case, he found no gitter cell myelin-staining granules present, and concluded that by this time a clearing up of the degenerative products had been completed.

He has also shown definite instances of heterotopia. Some of his cases showed pyramidal cells of no mean dimensions in the molecular layer. He also finds the usual gross changes noted by most authors, namely, simplified convolutional pattern, smallness of cerebellum, pons, and brain stem. He concludes that the brain of a Mongolian shows agenesis as evidenced by cell poverty and failure of gyral development; that there is a probable degeneration of the third layer of pyramids in early life; that there is aplasia as shown by the comparatively small size of the brain, and paragenesis as shown by the frequent occurrence of anomalies. From the neurological institute at the University of Vienna C. Inaba[9] reports some studies on the cerebral cortex in idiocy. He examined two idiot brains and one normal but relatively small brain from a person of normal intelligence, and he concluded that the outer layers of the cerebral cortex are more essential than the inner for intelligence; also that it is chiefly the cells of the second layer and external parts of the third layer and the tangential fibers and those of the external Baillarger that are concerned with the higher psychical functions.

REFERENCES

1. Bielschowsky, J.: f. Psychol. u. Neur. Bund 36, Heft 1 and 2, p. 103–, March, 1928.

2. Niemann: Jahrb. f. Kinderh. Berl., 1914, N.F. lxxix, 274–287.
3. Pick, L.: Med. Klin., 23 :1483–1488, Sept. 30, 1927.
4. Apt and Bloom: Journal American Medical Association, 90 :2076–, 1928.
5. Bloom and Kern: Arch. Int. Med., 39 :456–, March, 1927.
6. Oberling and Woringer: Rev. franc, de pédiat., 3 :475–532, August, 1927. "Figure," p. 6.
7. Van der Scheer, W. M.: Mongolismus, Berlin. S. Karper, 1927.
8. Davidoff: Arch. Neurol. and Psych., Vol. 20, p. 1239–, December, 1928.
9. C. Inaba: Arb. a. d. neurol. Inst. a. d. Wien. Univ., 29 :70–96, March 15, 1927.

A STUDY OF CONGENITALLY SYPHILITIC MENTAL DEFECTIVES

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The diagnosis of syphilis in the 71 cases in this study was made when definite physical stigmata of congenital syphilis were found regardless of the serological findings or when the blood Wassermann was definitely positive on repeated examination regardless of the physical findings. The differentiation from so-called acquired syphilis was based on the syphilitic nature of the family history, absence of exposure to infection by sex contact and age on admission to the institution. Only five cases were over 14 years of age on admission to the institution. The data is presented on Table 1.

Analysis of Data

Level of intelligence: Of the total number (71) 16 per cent were idiots, 34 per cent imbeciles and 52 per cent morons or borderline types. The lower the mental level the more common were indications found of organic involvement of the central nervous system. Of the idiots, one-half had neurologic signs and one-third positive spinal fluid findings. Of the imbeciles, one-third had neurologic signs and one-fourth positive spinal fluid findings. Of the morons, one-ninth had neurologic signs and one-sixth positive spinal fluid findings. None of the idiots had a bad family history so far as mental defect was concerned as opposed to 50 per cent each of the imbeciles and morons with a family history compromised by mental defect.

Table I.

	Intelligence				Stigmata			Neurologic			Wassermann				Spinal Fluid				Heredity			
	Idiots	Imbeciles	Morons	Total	Present	Absent	Total	Present	Absent	Total	Positive	Doubtful	Negative	Total	Not examined	Positive	Negative	Total	Unknown	Defective	Non-Defective	Total
Intelligence																						
Idiots	11	0	0	11	4	7	11	5	6	11	7	1	3	11	1	4	6	11	0	0	11	11
Imbeciles	0	24	0	24	15	9	24	7	17	24	13	4	7	24	1	6	17	24	7	5	12	24
Morons	0	0	36	36	17	19	36	4	32	36	26	4	6	36	5	6	25	36	11	8	17	36
Total	11	24	36	71	36	35	71	16	55	71	46	9	16	71	7	16	48	71	18	13	40	71
Stigmata																						
Present	4	15	17	36	36	0	36	11	25	36	18	3	15	36	4	8	24	36	12	5	19	36
Absent	7	9	19	35	0	35	35	5	30	35	28	6	1	35	3	8	24	35	6	8	21	35
Total	11	24	36	71	36	35	71	16	55	71	46	9	16	71	7	16	48	71	18	13	40	71
Neurologic																						
Present	5	7	4	16	11	5	16	16	0	16	13	1	2	16	2	8	6	16	3	2	11	16
Absent	6	17	32	55	25	30	55	0	55	55	33	8	14	55	5	8	42	55	15	11	29	55
Total	11	24	36	71	36	35	71	16	55	71	46	9	16	71	7	16	48	71	18	13	40	71
Wassermann																						
Positive	7	13	26	46	18	28	46	13	33	46	46	0	0	46	6	11	29	46	9	11	26	46
Doubtful	1	4	4	9	3	6	9	1	8	9	0	9	0	9	0	1	8	9	2	2	5	9
Negative	3	7	6	16	15	1	16	2	14	16	0	0	16	16	1	4	11	16	7	0	9	16
Total	11	24	36	71	36	35	71	16	55	71	46	9	16	71	7	16	48	71	18	13	40	71
Spinal Fluid																						
Not examined	1	1	5	7	4	3	7	2	5	7	6	0	1	7	7	0	0	7	2	1	4	7
Positive	4	6	6	16	8	8	16	8	8	16	11	1	4	16	0	16	0	16	4	2	10	16
Negative	6	17	25	48	24	24	48	6	42	48	29	8	11	48	0	0	48	48	12	10	26	48
Total	11	24	36	71	36	35	71	16	55	71	46	9	16	71	7	16	48	71	18	13	40	71
Heredity																						
Unknown	0	7	11	18	12	6	18	3	15	18	9	2	7	18	2	4	12	18	18	0	0	18
Defective	0	5	8	13	5	8	13	2	11	13	11	2	0	13	1	2	10	13	0	13	0	13
Non-defective	11	12	17	40	19	21	40	11	29	40	26	5	9	40	4	10	26	40	0	0	40	40
Total	11	24	36	71	36	35	71	16	55	71	46	9	16	71	7	16	48	71	18	13	40	71

Stigmata of congenital syphilis: (Hutchinson's teeth, interstitial keratitis, characteristic scars, deafness and bone lesions). These were present in 51 per cent of the cases. They occurred more frequently in cases with neurological involvement. They were frequently present when the blood Wassermann was entirely negative. They were found more often in cases from stock of good mentality than in cases from mentally defective stock.

Neurologic signs and positive spinal fluid findings: Each were found in 22.5 per cent of the cases. They occurred more frequently among the idiot and imbecile groups and in those cases with family histories free from mental defect. Spinal fluid findings were positive in instances where there were no other evidences of syphilis, serologically or physically.

Blood Wassermann: Positive in 65 per cent, doubtful in 13 per cent and negative in 22 per cent. In those cases with negative blood Wassermanns there were stigmata of congenital syphilis or positive spinal fluid findings.

Heredity: All except the unknowns were known to have a history of parental syphilis. In 25 per cent of the cases there was not sufficient information to determine the status of their ancestry either as regards syphilis or mental defect. Eighteen per cent were known to have an ancestry compromised by mental defect in addition to syphilis. Fifty-six per cent were known to have a good heredity as far as mental defect was concerned but had a history of parental syphilis. The difference in the findings between the cases free from an ancestral mental defect and compromised by a mentally defective heredity is instructive. *Vide infra,* Table II.

TABLE II

	Cases with non-defective stock (Total No. 40)	Cases with defective stock (Total No. 13)
	Per cent	Per cent
Idiots	27.5	0.0
Imbeciles	30.0	38.0
Morons	42.5	62.0
TOTAL	100.0	100.0
Stigmata present	47.5	38.5
Stigmata absent	52.5	61.5
TOTAL	100.0	100.0
Neurologic signs present	27.5	15.0
Neurologic signs absent	72.5	85.0
TOTAL	100.0	100.0
Blood Wassermann positive	65.0	85.0
Blood Wassermann doubtful	12.5	15.0
Blood Wassermann negative	22.5	0.0
TOTAL	100.0	100.0
Spinal fluid not examined	10.0	8.0
Spinal fluid positive	25.0	15.0
Spinal fluid negative	65.0	77.0
TOTAL	100.0	100.0

A check-up of the fraternities of both the cases with defective stock and those with non-defective stock gives the results tabulated below:

TABLE III

	Cases with non-defective stock (Total number of families — 40)	Cases with defective stock (Total number of families — 13)
	Per cent	Per cent
Miscarriages	20 or 10.0	0 or 0.0
Still-births	10 or 5.0	1 or 2.0
Dead children	32 or 16.0	4 or 8.0
Living defectives or delinquents	69 or 34.0	37 or 74.0
Living—mentally normal	70 or 35.0	8 or 16.0
Total number of pregnancies	201 or 5 to a family	49 or 4 to a family

INTERPRETATION

1. A germ plasm defect (mentally defective heredity) had no part as an etiological moment in the production of the crippled mentality of any idiot in this study. Furthermore, it was apparently excluded in at least 56 per cent of the total number of cases studied. This does not mean that it was present in the other 44 per cent as in 25 per cent of the cases no information on this matter was available.

2. The level of intelligence in congenitally syphilitic defectives bears a direct relation to the severity of involvement of the central nervous system by the infection.

3. As stigmata of congenital syphilis are simply evidences of past spirochaetal activity it is not surprising to find them present when the blood Wassermann is negative and it is also consistent to see them more commonly in cases with neurological involvement.

4. Tables II and III present indisputable evidence to the effect that congenitally syphilitic defectives and their families with a defective ancestry are far more resistant to a syphilitic infection than those with a non-defective ancestry.

CONCLUSIONS

1. All defectives with positive blood Wassermanns or signs of a central nervous system lesion should have as a routine a spinal fluid examination-cell count, globulin, Wassermann and colloidal gold curve.

2. Statistics show that syphilis is not any more common among mental defectives than among the population as a whole. This does not mean, however, that syphilis is to be disregarded and passed over simply as co-incidental when it is found. Every case must be studied individually and if diagnosed early enough, vigorous anti-syphilitic treatment may justify itself by its results. With only rare exceptions were any of the cases in this study diagnosed prior to admission and at such a late age (even early childhood) the damage had already been done and not much could be expected of treatment. This study barely suggests, from the obvious better resistance to a syphilitic infection in the cases and families with a feeble-minded taint in their heredity, the possibility that the resistance and feeble-minded heredity are both present for the same reason.

BIBLIOGRAPHY OF WALTER E. FERNALD, A.M., M.D.

By E. E. Woodill, M.D., and A. M. Wallace, M.D.,
WALTER E. FERNALD STATE SCHOOL

Dr. Walter E. Fernald always considered the education of the public to be one of his first duties. At the beginning of his career, there was little sympathy with the feeble-minded. They were considered as a problem to be pushed aside and ignored as far as possible, or they were to be placed in custodial institutions and receive kindly care but nothing more. In spite of the efforts of such educators as Dr. Howe and Dr. Seguin, education and educational methods had made little progress. Little was known of the moron. Mental defect above the grade of imbecile or idiot was seldom recognized.

Dr. Fernald realized early that no progress could be made without the backing of public opinion. His great love of humanity gave him a keen understanding of the problem of the care and training of the feeble-minded, and his marvelous vision enabled him to think far ahead of his time. He endeavored in every way to give others the benefit of his knowledge and experience. Not only in Massachusetts but in many other states, he was instrumental in bringing about the understanding that feeble-mindedness entered the fields of medicine, sociology, psychology, criminology, mental hygiene, endocrinology, education and economics. His writing was constructive in character and always presented some practical working plan or program.

In addition to his published works, he wrote many valuable things that are unpublished. Some of these are contained in letters of advice to the National Society for Mental Hygiene, letters to the School of Occupational Therapy, letters of advice on the organization of new institutions outside of Massachusetts. Other unpublished works are "Practical Exercises for the Training of Low Grade Children," and "Lectures on Spastic Paralysis."

The following is a bibliography of his publications arranged chronologically.

BIBLIOGRAPHY ARRANGED BY YEARS

1893

Fernald, Walter E. "The History of the Treatment of the Feeble-minded." In Report of the Proceedings of the Twentieth National Conference of Charities and Correction, 1893, pages 203–221. Reprint, Boston, G. H. Ellis, 1893. Fourth edition, Boston, press of G. H. Ellis Co., 1912. In Massachusetts Public Documents, 1901, Vol. II.

This paper was read at a combined meeting of The Association of Medical Officers of American Institutions for Idiocy and Feeble-minded Persons and the International Conference of Charities and Corrections held at the World's Fair at Chicago in 1893. Dr. Fernald was president of the Association of Medical Officers of American Institutions for Idiotic and Feeble-minded Persons at that time. The paper summarizes and interprets the progress of the care and training of the feeble-minded from the time of Seguin to the end of 1892.

1894

FERNALD, WALTER E. "Some of the Methods Employed in the Care and Training of Feeble-minded Children of the Lower Grades." Reprinted from the Proceedings of Medical Officers of American Institutions for Idiotic and Feeble-minded Persons — Session, 1894. In Association Proceedings, 1894, pages 450–457. Fourth edition, Boston, press of G. H. Ellis Co., 1912. In Rev. Int. de ped comp., May, 1899, Vol. 1, pages 148–154.

This paper has for many years served as a text book on the subject and has had a very wide distribution. It was translated into French and published under the title of "Quelques unes des methodes employées pour les soins et l'education des enfants les plus idiots." It was first read at the Eighteenth Session of the Association of Medical Officers of American Institutions for Idiotic and Feeble-minded Persons, held at Fort Wayne, Indiana, in 1894.

1897

FERNALD, WALTER E. "Feeble-minded Children." Third edition, Boston, press of G. H. Ellis Co., 1912.

This paper, read before the New England Association of School Superintendents in Boston, in 1897, treated the subject from an educational standpoint, and brought the importance of establishment of special classes for mentally dull and retarded children in the public schools to the attention of educators. Up to this time the only special class of this kind was one at Providence, Rhode Island.

1902

FERNALD, WALTER E. "The Templeton Farm Colony for the Feeble-minded." In National Conference of Charities and Correction Proceedings, 1902, pages 487–490.

In Survey, March 2, 1912, Vol. XXVII, No. 22, pages 1873–1877, illus. Reprinted from Survey, 1912.
An outline of the first five years of the Templeton Colony. Gives the reasons for starting the Colony, the plan of construction, the early organization, and a report of the work done from the time of the transfer of the first fifty boys from Waverley.

1902

Fernald, Walter E. "Educational Treatment of the Feeble-minded." Reprinted from New England Medical Gazette. Read before the Boston Homeopathic Medical Society, February 6, 1902. Treats the subject from the standpoint of the medical profession and explains in great detail the physiological training as outlined by Seguin and carried out at Waverley.

1903

Fernald, Walter E. "Farm Colony in Massachusetts." In Journal of Psycho-Asthenics, June, 1903, Vol. VII, No. 4, pages 74–80.

1903

Fernald, Walter E. "Discussion on 'Should the Scope of the Public School be Broadened?'" In National Educational Association Proceedings, 1903, pages 1005–7.
This article was a rather lengthy discussion of a paper read by Mary C. Greene, ex-superintendent of Special Classes for the Blind in the Board Schools, London, England, on "Should the Scope of the Public School System be Broadened so as to Take in All Children Capable of Education?" If so, how should this be done? This paper was read at the Annual Convention of the Department of Special Education at Boston, Mass., July, 1903. The following quotation indicates the stand taken by Dr. Fernald at this time: "Every American child has the right to be educated according to his need and capacity."

1903

Fernald, Walter E. "Mentally Defective Children in the Public Schools." In Journal of Psycho-Asthenics, December, 1903, March, 1904, Vol. VIII, pages 25–35.
This paper was written after a trip abroad in 1903. It is devoted to a description of special classes for the feeble-minded in many cities in Prussia, Norway, Sweden, Denmark, Switzerland and England. It did much to stimulate

interest in the establishment of special classes in the public schools of this country.

1904

FERNALD, WALTER E. "Care of the Feeble-minded." In National Conference of Charities and Correction, Proceedings, 31st Annual Session, 1904, page 380. Reprint.

1904

FERNALD, WALTER E. "Maine, New Hampshire, Rhode Island." Report. In Journal of Psycho-Asthenics, September, 1904, Vol. IX, No. 1, page 261.

1906

FERNALD, WALTER E. "The Importance of the Early Discovery and Treatment of Defectives in Special Public School Classes." An address before the Public Education Association of Philadelphia, November 9, 1906.
This was one of the earliest papers written from an educational standpoint and did much to interest educators in the problem of feeble-minded children in public schools and public school special classes.

1907

FERNALD, WALTER E. "Possibilities of the Colony." In National Conference of Charities and Correction, Proceedings, 1907, pages 411–418. Discussion, pages 419–422, by Dr. Fernald and others.

1908

FERNALD, WALTER E. "Massachusetts School for the Feeble-minded at Waltham." Reprinted from the Sixtieth Annual Report of the Trustees.

1908

FERNALD, WALTER E. "The Imbecile with Criminal Instincts." Published in American Journal of Insanity, Vol. LXX, No. 4, April, 1909. In Journal of Psycho-Asthenics, September, 1909–June, 1910, Vol. XIV, pages 16–36. Reprint. Fourth edition, Boston, press of G. H. Ellis Co., 1912.
This paper was read at the Sixty-Fourth Annual Meeting of the American Medico-Psychological Association, Cincinnati, Ohio, May 12–15, 1908. It presents the subject from the standpoint of delinquency and criminology. (The term "Moron" was not used at this time and "Imbecile" includes this group.)

1910

Fernald, Walter E. "Circular Letter Sent Out by the Chairman of Committee on Classification of Feeble-minded." April 23, 1910. In Journal of Psycho-Asthenics, Sept., Dec., 1910, Vol. XV, No. 1, 2; pages 62–63.

1911

Fernald, Walter E. "Report of the Commission to Investigate the Question of the Increase of Criminals, Mental Defectives, Epileptics and Degenerates." Boston, Wright & Potter Printing Co., 1911.

Commission appointed by the Governor in 1910, Dr. Fernald as Chairman of the Commission of five men, makes the report and covers twenty years, from 1890 to 1909, inclusive. As a result of the twenty recommendations made in this report many beneficial laws have been passed. Associated with Dr. Fernald were Hollis M. Blackstone, Everett Flood, Benjamin F. Bridges, Ernest V. Scribner.

1912

Fernald, Walter E. "The Burden of Feeble-mindedness." The annual discourse delivered before the Massachusetts Medical Society at Boston, June 12, 1912. Published in the Medical Communications of The Massachusetts Medical Society, Vol. XXIII, 1912. In Boston Medical and Surgical Journal, June 27, 1912, Vol. CLXVI, No. 26, pages 911–915. In Journal of Psycho-Asthenics, March, 1912, Vol. XVII, No. 3, pages 87–99. Reprinted from the Medical Communications of the Massachusetts Medical Society, Vol. XXIII, 1912.

This paper was the annual discourse read at the annual dinner of the Massachusetts Medical Society and presents to the medical profession the subjects of the known pathology, causes, types and influence of heredity, also the social, economic aspects and a discussion of sterilization. The need of greater understanding of the problem among the medical profession is emphasized and their aid in helping in the elimination of the feeble-minded is urged.

1912

Fernald, Walter E. "Some Phases of Feeble-mindedness." Published by J. B. Lyon Company, Printers, Albany, 1912. In New York City Conference of Charities and Correction, third Proceedings, 1912, pages 148–159.

This paper was read at the National Conference of Charities and Correction at Portland, Maine, in 1904. It presented the subject of mental defect from a sociological and economic standpoint and emphasized that juvenile delinquents and adult criminals should be studied from this angle. This paper was of great assistance in interesting the people of Maine in establishing an institution for the feeble-minded.

1914

Fernald, Walter E. "Report of the Commission for the Investigation of the White Slave Traffic, So-called." February, 1914. Published by Wright & Potter Printing Co., Boston, 1914.

This Commission was appointed by Governor Foss in accordance with the law, Chapter 64, Resolves, 1916, to investigate vice of a sex nature in Massachusetts. The other members of the Commission were Charles W. Birtwell, Laura Jaquith, Edwin Mulready. Dr. Fernald was the Chairman. Most of the laws recommended by the Commission were later passed.

1914

Fernald, Walter E. "Municipal Duty to the Feeble-minded." In Proceedings of the Union of Nova Scotia Municipalities, 1914.

On the invitation of the Committee on the Feeble-minded in Nova Scotia, Dr. Fernald read this paper at Amherst, Nova Scotia, in 1914, to stimulate public interest and to assist in the movement to start an institution for the care of the feeble-minded of the Maritime Provinces.

1914

Fernald, Walter E. "The Diagnosis of the Higher Grades of Mental Defect." Published in American Journal of Insanity, Vol. LXXX, No. 3, January, 1914. Reprinted from Journal of Insanity, Vol. LXXX, No. 3, January, 1914. In Journal of Psycho-Asthenics, December, 1913, pages 73–84. In Transactions of the Fourth International Congress on School Hygiene, Vol. III, pages, 543–552. In Ungraded, February, 1922.

This paper was written when the formal mental tests were just coming into general use. It indicates in a general way the fields of investigation necessary to make a diagnosis and give advice.

1915

Fernald, Walter E. "The Feeble-minded in the Community." In Femina, February, 1915, pages 47–50

1915

Fernald, Walter E. "What is Practicable in the Way of Prevention of Mental Defect." Reprinted from the Proceedings of the National Conference of Charities and Correction, 1915. Also in Report on Care and Control of Mental Defectives and Feeble-minded in Ontario, 1919. Massachusetts Society for Mental Hygiene, Publication No. 6.

This paper was read before the National Conference of Charities and Correction, Baltimore, 1915. It is a definite program for the prevention of mental defect. He advised segregation, supervision and continuing census and registration of the feeble-minded. Education in its broadest sense. "The public generally should be persistently informed as to the extent, causes and results of feeble-mindedness by means of suitable literature, popular lectures, and other means."

1915

Fernald, Walter E. "The Duty of the State toward the Feeble-minded." In New York State Conference Charities and Correction Proceedings, 1915, pages 178–192.

1917

Fernald, Walter E. "The Development of The Children's Hospital and School, Randall's Island, New York City." Published in Recommendations of The Advisory Board, February, 1917.

The Advisory Board for Randall's Island consisted of Dr. Charles L. Dana, Chairman; Miss Eleanor H. Johnson, Secretary; Mrs. Edward C. Bodman, Prof. Stephen P. Duggan, Dr. Walter E. Fernald, Mrs. Charles Dana Gibson, Hon. Franklin C. Hoyt, Dr. William L. Russell, Dr. Thomas W. Salmon, Mrs. William K. Vanderbilt, Mr. Felix M. Warburg, Prof. Robert S. Woodworth. Dr. Fernald was very active on this board and did much to formulate the plans for the reorganization of the Children's Hospital and School, Randall's Island.

1917

Fernald, Walter E. "The Growth of Provision for the Feeble-minded in the United States." Published in Mental Hygiene, Vol. 1, No. 1, January, 1917, pages 34–57. Reprinted from Mental Hygiene, Vol. 1, No. 1, pages 34–57, January, 1917. Reprint in "The Care and Control of the Mentally Defective in Ontario," 1919.

1917

Fernald, Walter E. "Standardized Fields of Inquiry for Clinical Studies of Borderline Defectives." Published in Mental Hygiene, Vol. I, No. 2, pages 211–234, April, 1917. Reprinted from Mental Hygiene, Vol. I, No. 2, pages 211–234, April, 1917.

This paper was read before the Boston Society of Psychiatry and Neurology in January, 1917. It was written to establish a standard method of examining patients for mental defect. It outlines the Ten Fields of Inquiry which have been used in many clinics in this and other states, and was adopted by the Commission on Mental Diseases for use in the school clinics throughout this state. At this time many psychologists contended that mental tests alone were all that were needed to make a diagnosis of mental defect. Dr. Fernald knew that this could not be done. This paper was a protest against this method.

1917

Fernald, Walter E. "The Feeble-minded." Published in the Educational Review, New York, September, 1917.

Read at the Conference of Feeble-mindedness of the Massachusetts Society for Mental Hygiene, 1916. Dr. Fernald summed it up as follows: "This Conference is really a checking up of our knowledge and a mobilization of our resources preliminary to a concerted and correlated drive upon the feeble-mindedness all along the line."

1918

Fernald, Walter E. "Waverley Researches in the Pathology of the Feeble-minded." Memoirs of American Academy of Arts and Sciences, May, 1918. Vol. XIV, No. 11. Research Series, Cases I–X.

Edited by Walter E. Fernald, M.D., A.M., Superintendent of the Massachusetts School for the Feeble-minded; E. E. Southard, M.D., Sc.D., Pathologist, Massachusetts Commission on Mental Diseases and Bullard Professor of Neurology, Harvard Medical School, with the collaboration of Annie E. Taft, M.D., Special Investigator, Massachusetts Commission on Mental Diseases and Custodian of the Neuropathological Collection, Department of Neuropathology, Harvard Medical School.

Dr. Fernald, realizing that little was known of the pathology of mental defect, formulated the scheme of having a study made of fifty post-mortem brains and furnished the inspiration for this work. He interested Dr. E. E. Southard in the scientific part of the work and in May, 1918, the first volume was published. Most of the brains for this study were furnished from the Waverley School. A large number of the autopsies were done by Dr. Myrtelle Canavan. Dr. Annie E. Taft did most of the brain observations.

1918

Fernald, Walter E. "Some of the Limitations of the Plan for Segregation of the Feeble-minded." In Ungraded, May, 1918, pages 171–176.

1919

Fernald, Walter E. "A State Program for the Care of the Mentally Defective." In Canadian Journal of Mental Hygiene, July, 1919, Vol. I, No. 2, pages 103–110.

This paper was read several times and was presented in three different states; first at the Child Welfare Conference of the Children's Bureau at Washington, D. C., in June, 1919; second, at the State Conference of Social Work at Madison, Wisconsin, in 1919, and again at the meeting of the Iowa State Board of Control and the Des Moines Health Center in 1920. It presents the most comprehensive program for the care of the mentally defective that has ever been formulated.

1919

Fernald, Walter E. "An Outline of a State Program for the Care of the Feeble-minded." In Proceedings of the Wisconsin State Conference of Social Work, Madison, Wisconsin, October 14, 1919, page 56. Reprinted in Iowa Board of Control Bulletin, 1920.

1919

Fernald, Walter E. "Report of the Special Commission Relative to the Control, Custody and Treatment of Defec-

tives, Criminals and Misdemeanants." February, 1919. Published by Wright & Potter Printing Co., Boston, 1919. Abstract in Journal of Delinquency, July, 1923.
Dr. Fernald was chairman of this Commission. The other members were Ellen Gray, Thomas W. White, Edward Bagley, George M. Kline, M.D., and Robert Kelso. Six constructive recommendations for legislation resulted from this investigation. Some of the most important laws passed later were The Custodial Care of the Defective Delinquent, The Compulsory Examination of Children in the Public Schools Three Years Retarded Mentally, and A Central System of Registration of the Feeble-minded under the Direction of the Commission on Mental Diseases.

1919

FERNALD, WALTER E. "After-care of the Patients Discharged from Waverley for a Period of Twenty-five Years." Reprint in Ungraded, Vol. V, No. 2, November, 1919. In publication of The Canadian National Committee for Mental Hygiene, Canada, 1920.
Dr. Fernald felt that the time was ripe for placing more patients in the community and for establishing a social service department to carry on their supervision. Before he felt justified in doing this he wished to have some knowledge of what had happened to the patients who had been discharged from the School. This survey proved that many of the things that were supposed to have happened to these patients had not happened and it gave him courage to place more trained patients at work for wages.

1920

FERNALD, WALTER E. "An Out-Patient Clinic in Connection with a State Institution for the Feeble-minded." Published in American Journal of Insanity, Vol. LXXVII, No. 2, October, 1920. Reprinted from American Journal of Insanity, Vol. LXXVII, No. 2, October, 1920.
This paper was read at the Seventy-Sixth Annual Meeting of the American Medico-Psychological Association, Cleveland, Ohio, June 1–4, 1920. It was a report of the work done by the out-patient clinic held at the Massachusetts School for the Feeble-minded from 1891 to 1920. Six thousand patients had been examined and advised during that period.

1920

FERNALD, WALTER E. "Mental Hygiene." In Boston Medical and Surgical Journal, Vol. CLXXXIII, No. 27, December 30, 1920.

This paper was read before the Massachusetts Medical Society, June 9, 1920. Dr. Fernald approached the subject from a mental hygiene standpoint. The purport of the paper was to give physicians some idea of community care of the feeble-minded and it stresses early diagnosis, and understanding of the great number of mentally defective who must be cared for extra-institutionally.

1921

FERNALD, WALTER E. "Waverley Researches in the Pathology of the Feeble-minded." Memoirs of American Academy of Arts and Sciences, December, 1921. Vol. XIV, No. III. Research Series, Cases XI to XX.

Edited by Walter E. Fernald, M.D., A.M., Superintendent Massachusetts School for the Feeble-minded, Waverley, and E. E. Southard, M.D., Sc.D., Pathologist, Massachusetts Commission on Mental Diseases, and Bullard Professor of Neuropathology, Harvard Medical School, with the collaboration of Myrtelle Canavan, M.D., in charge of the Pathological Division, Massachusetts State Psychiatric Institute and Pathologist, Boston State Hospital, and Oscar J. Raeder, M.D., Assistant Pathologist, Massachusetts State Psychiatric Institute, and Pathologist, Boston State Hospital.

1922

FERNALD, WALTER E. "The Inauguration of a State-Wide Public School Mental Clinic in Massachusetts." Published in Mental Hygiene, Vol. VI, No. 3, July, 1922. Reprinted from Mental Hygiene, Vol. VI, No. 3, July, 1922.

This paper was read at the Forty-Sixth Annual Meeting of the American Association for the Study of the Feeble-minded, St. Louis, May 20, 1922. Dr. Fernald had always felt that the diagnosis of mental defect should be made as early as possible. He reasoned that all children pass through the public school system at some time. Acting largely on his advice in 1919 the Legislature passed a law requiring the mental examination of children three years or more retarded in mental development and the establishment of special classes in cities or towns where ten or more mentally defective children were found. This paper describes the establishment and organization of a net work of clinics covering the entire state.

1923

Fernald, Walter E. "The Subnormal Child." Published by School and Society, Vol. XVIII, No. 458, October 6, 1923. Reprinted from School and Society, Vol. XVIII, No. 458, October 6, 1923.

This paper was read at a meeting of the Harvard Teachers' Association at Sanders Theatre, Harvard College, April 28, 1923. The writer calls attention to the greatly increased interest of the educator in the subnormal child. The program for the salvage of the subnormal child may be summed up as follows: 1. Early recognition of every defective in the public schools. 2. Education suited to each child's needs and capacity. 3. Long-continued industrial and vocational training. 4. Social service during the lifetime of the child.

1923

Fernald, Walter E. "The Salvage of the Backward Child." Published in The Boston Medical and Surgical Journal, Vol. 189, No. V, pages 161–165, August 2, 1923. Reprinted from The Boston Medical and Surgical Journal, Vol. 189, No. V, August 2, 1923.

This paper was read at the Conference on Mental Hygiene at Boston, April 12, 1923. It emphasizes the impossibility of institutional care for all the feeble-minded on account of the magnitude of the problem and presents the following program. 1. Identification. 2. Registration. 3. Supervision. 4. Instruction. 5. Segregation.

1923

Fernald, Walter E. "What Shall We Do with the Feeble-minded?" Published in Hospital Social Service, Vol. VIII, No. 2, August, 1923. Reprinted from Hospital Social Service, Vol. VIII, No. 2, August, 1923.

This paper was read before the Philadelphia Conference on Social Work, April 19, 1923, and stresses community care, and in conclusion says, "The real purpose of this program is to make education and social service in the broadest sense the keynotes of the management of feeble-mindedness.

1924

Fernald, Walter E. "Thirty Years' Progress in the Care of the Feeble-minded." Published in Proceedings of the Forty-Eighth Annual Session of the American Association for the Study of the Feeble-minded, 1924. Reprinted from the Proceedings of the Forty-Eighth Annual Session of the American Association for the Study of the Feeble-minded, 1924.

Address of Dr. Fernald at the annual meeting of the American Association for the Study of the Feeble-minded in May, 1924, of which Dr. Fernald was president for the second time in the history of that organization. In 1893, at the International Conference of Charities in Chicago, "The History of the Feeble-minded" was assigned as the subject of the president's annual address and was a brief summary of the progress of this movement from the time of Seguin until the end of 1892. This address reviews "the progress made in the science and art of caring for the feeble-minded" from 1893 to 1923.

1924

Fernald, Walter E. "Feeble-mindedness." Published by Mental Hygiene, Vol. VIII, No. 4, October, 1924, pages 964–971. Reprinted from Mental Hygiene, Vol. VIII, No. 4, October, 1924.

This paper was written for inclusion in the third edition of "A Mental Health Primer. It presents the subject of feeble-mindedness in very simple language for popular distribution of the National Society for Mental Hygiene.

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AUTHOR Bulletin of the Mass.Dept.
of Mental Diseases

TITLE FERNALD MEMORIAL NUMBER Aprl.193

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Bulletin of the Massachusetts
Department of Mental Diseases

FERNALD MEMORIAL NUMBER

Vol. XIV Nos. 1 & 2
April, 1930